

CRANFIELD UNIVERSITY

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USING A PARADOX LENS: A STUDY INTO THE CHALLENGES FACING AN ESTABLISHED
SERVITIZATION PROVIDER

CRANFIELD SCHOOL OF MANAGEMENT

Doctor of Philosophy
Academic Year: 2015 - 2020

Supervisor: Dr Andy Angus
September 2020

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ABSTRACT

The current zeitgeist for servitization within manufacturing emphasises the need for manufacturers to balance the contradicting demands of production and service elements in the effort to deliver customised solutions. This emphasis on juxtapositioning two contradictory logics can however result in competing intra-organisational demands which are not always capable of a finite solution, often resulting in tensions and conflictions many managers struggle to navigate. Using a case study methodology this study identifies frequent and critical challenges facing an established servitization manufacturer and challenges the traditional binary "either/or" approach to their solution by viewing the challenges through a paradox lens to highlight their often simultaneous, interconnected, and interrelated nature and offering paradox theory as an alternative narrative to reframe such tensions. The conceptualisation of paradoxes within organisational challenges has remained relatively unexamined in servitization studies, resulting in an oversimplification of underlying challenges facing manufacturer's delivering a servitization strategy.

The study applies an exploratory, holistic single case design utilising semi-structured interviews to explore challenges experienced by 31 senior managers; employing paradox theory as a conceptual lens to better understand the contextual particulars individuals were drawing on to describe and construct their experiences of intra-organisational challenges. The study then undertakes a comparative analysis of extant literature against empirical data from the case study to identify which challenges present in the case study appear recursive and identifies what tensions within them contribute to such an outcome.

The study generated five key insights at the individual level of analysis. First, the empirical confirmation of a conceptual typology presenting a holistic and contextual model that captured the challenges facing an established servitization organisation, as observed from its own senior management's perceptions. Second, the identification of ten recursive challenges. Third, the analysis of the recursive challenges resulted in the identification of ten paradoxical tensions as causal agents underpinning their cyclical nature and are not currently associated with the servitization perspective. Fourth, the observation that

the recursive tensions are interconnected and interrelated often spurring other paradoxical tensions; and fifth, paradoxical tensions contain within them multiple temporal dimensions which can affect the nature not only of the tension but actors perceptions; again, this is a view not associated with servitization studies.

The study offers four theoretical contributions to knowledge. First, the study extends the servitization knowledge base by addressing its lack of contributions from paradox theory. Second, the study challenges the traditional simplistic assumptions concerning servitization challenges arguing that such generalisations to be deeply flawed and lacking contextual understanding. Third, the study identified ten recursive challenges with ten novel tensions acting as causal agents for their sustainment and identifying such tensions as interconnected and interrelated; thus, can spur other tensions. Finally, the study introduces a novel perspective in discussing servitization challenges by introducing how socially constructed temporal perspectives can not only shape an individual's perspective on challenges identified but also shape their responses.

Keywords:

Servitization, paradox, tensions, competing demands, temporality.

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From the very beginning, this PhD journey has been about satisfying an academic and leadership itch that has needed scratching for far too many years. During my career I have held a variety of eclectic roles that have seen me operate in a myriad of complex and ambiguous situations, and in all of them making decisions and seeing them through with crystal clarity was the expected response. Yet, as many in leadership positions understand, 'plans rarely survive first contact with the enemy' and so frequently my decision-making was more about balancing contradictory evidence and demands, while still getting the job done. The itch concerned a need to better understand how management deal with such ambiguity without become paralysed by them. Now after years of trying to scratch that itch though self-learning it was time for a more rigorous exploration, and so the PhD journey began, where it will lead is part of the journey to come.

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LIST OF KEY TERMS

Case Study	An empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomena and context is not clearly evident (Yin, 2009, p.18).
Centripetal Force	The force that is necessary to keep an object moving in a curved path and that is directed inward toward the centre of rotation. Websters Dictionary.
Centrifugal Force	The apparent force that is felt by an object moving in a curved path that acts outwardly away from the centre of rotation. Websters Dictionary.
Epistemology	A branch of philosophy that investigates the origin, nature, methods, and limits of human knowledge (Holosko and Thyer, 2011).
Intangible Attributes	Refers to how things are done and why establishing the context rather than focussing on concrete features.
Interdisciplinary	A mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialised knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.
Installed Product Base	Refers to the number of products that are out in the field (Baines and Lightfoot, 2013, p. 29).
Intermediate Theory	Intermediate theory lies in between mature theory and nascent theory, utilises prior research, often drawing on research from other domains to propose new constructs and frequently involves the use of mixed methods.
Mature Theory	Describes scholarship that over time has become established with well-developed models and constructs, where academics broadly agree with the knowledge acquired.
Nascent Theory	A field of research that is less developed, often immature in its answers to novel questions, often seeking to suggest new connections amongst the phenomenon, in general domains which have attracted little formal theorising to date, or perhaps represents a new phenomenon to be studied, maybe by utilising other domains theories to shed new insights.

Ontology	A branch of philosophy dealing with the essence of phenomena and the nature of their existence (Symon and Cassell, 2012, p. 17).
Paradox	'Contradictory yet interrelated elements that exist simultaneously and persist over time' (Smith and Lewis, 2011, p. 382).
Sociomateriality	A theory that looks at how human beings, spatial arrangements, technology, physical objects are entangled with the ideas of language, interaction, and practices in organisations (Bansal and Knox-Hayes, 2013).
Tensions	Two co-existing contradictory forces with conflicting goals (Fang, Chang and Peng, 2011, p. 774)
Threshold concept	<i>'A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something...'</i> (Meyer and Land, 2003, p. 1).
Sensitising Concept	These concepts present initial ideas for further investigation and sensitize one to ask particular types of questions in relation to one's research. (Charmaz, 2006).
<i>Sine qua non</i>	An essential element or condition.
Snowballing Sampling	Asking current research participants to ask other people whom they know to participate in the current research study; a form of nonprobability based sampling. (Holosko and Thyer, 2011).
Offering	The term is used in this paper to denote any physical good, service, information, or any combination of these that a company can offer to its customers: the total offering includes all offerings of a company as an aggregate. (Source: Brax, 2005, p. 143).
Psychological Contract	This term refers to perceptions individuals have about a set of mutual obligations that link employers and employees. They are based on expectations that each party will fulfil its obligation in accordance with their implicit contracts. (Source: Datta et al., 2010, p. 308).
Purposive Sampling	The purposive sampling is the deliberate choice of a participant due to the qualities the participant possesses. It is a non-random technique that involves identification and selection of individuals or groups of individuals that are

proficient and well-informed with a phenomenon of interest (Cresswell and Piano Clark, 2011).

- Pluritemporalism Existence of a plurality of different modes of social time(s) that may exist side by side (Nowotny, 1992, p. 143).
- Write-down An accounting process which consists of the downward adjustment in the valuation of an asset. A write-down is often considered synonymous with a write-off: however, while a write-off is generally completely removed from a firm's balance sheet, a write-down reassesses the asset with a lower value. (Source: Sutherland and Canwell, 2004, p. 244).

LIST OF ABBREVIATIONS

CCS	Contracts Commitment Solution
CEO	Chief Executive Officer
CTO	Chief Technology Officer
HPC	High-Performance Culture
ICT	Information, Communication and Technology
M&A	Mergers and Acquisitions
MRO	Maintenance, Repair and Overhaul
NPI	New Product Introduction
OEM	Original Equipment Manufacturer
OMS	Organisational Management Studies
PhD	Doctor of Philosophy
P&L	Profit and Loss
PSS	Product Service Systems
R&D	Research and Development
RBV	Resource-Based View
SBU	Strategic Business Unit
SLT	Senior Leadership Team
SFO	Senior Fraud Office
SORB	Sales and Operations Review Board
SSMER	Service-science management and engineering research
SVP	Senior Vice-President
VRIN	Valuable, Rare, Inimitable, and non-substitutable resources

1 INTRODUCTION TO THESIS

This chapter presents an introduction to the phenomenon of interest and an overview of the research predicated on both theoretical as well as empirical observations, and analyses. The chapter concludes by presenting a synopsis of the remaining chapters that contribute to this thesis.

1.1 Overview of the phenomenon of interest

This thesis explores the organisational challenges and often contradictory demands inherent within many of them from the context of an established manufacturing entity regarded as an exemplar of servitization. It is this researcher's belief that, generally, the new things we have learnt in Organisational Management studies (OMS), philosophy, and strategy studies, and specifically what we have learned in paradox theory, offers valid and relevant analogies to organisational problems lying outside much of the extant servitization literature. But before venturing further into the domain of paradox theory it is necessary to sketch, with perhaps an exaggerated simplicity, the state of knowledge regarding the phenomenon of servitization.

In recent years the world of manufacturing has been subjected to a variety of seismic changes across political, economic, and technological fields with the phenomenon referred to by some as '*the age of modernity*' (Taskin and Devos, 2005, p. 13) and as such the challenge of sustaining a manufacturing industry in modernity has garnered interest from scholars, practitioners and policymakers alike (Baines et al., 2013, 2017, 2009c; Kowalkowski, Gebauer and Oliva, 2017; Lay, 2014).

From a historical perspective, manufacturing and service industries have traditionally been portrayed as divergent entities (Bigdeli et al., 2017a), yet as the world's economies develop and technologies improve there has been a '*shift from manufacturing goods to integrated solutions*' (Zhang and Banerji, 2017, p.217); (see also Baines and Lightfoot, 2013; Davies, 2004; Kowalkowski, Gebauer and Oliva, 2017; Parida et al., 2015; Storbacka, 2011; Ulaga and Reinartz, 2011). Such a 'shift' can be seen in the change of focus of western European and North America manufacturers from traditional product-centric offerings (Neely, 2008; Wise and Baumgartner, 1999) to one predicated more on an integrated mix of product-services (Baines et al., 2009). The addition of services to the manufacturing

mix has been presented as a mitigation strategy to address increased competition as well as deliver improved profit margins (Bustinza et al., 2015; Fang, Palmatier and Steenkamp, 2008), enhanced competitive advantage (ibid) through to creating superior customer value (Albort-Morant et al., 2018; Bustinza et al., 2015; Luoto, Brax and Kohtamäki, 2017; Macdonald, Kleinaltenkamp and Wilson, 2016; Parida et al., 2014; Raddats et al., 2019; Vandermerwe and Rada, 1988).

Many scholars see the adoption and development of a greater role of services within manufacturing to be a '*sine qua non*' strategic choice if manufacturers wish to achieve both competitive advantage and a sustainable business. The importance of services has long been known, indeed its value to the UK economy was highlighted by a House of Commons paper dated 31 March 2020, which confirmed that in 2018 approximately 80% of UK GDP was generated by some form of services output ([House of Commons Library, 2019](#)).

This '*paradigm shift*' (Baines and Lightfoot, 2013, p. 3) in manufacturing strategy was first identified by Vandermerwe and Rada (1988) under the neologism '*servitization*' (ibid, p.314) and since the 1980s, servitization, as a concept, has been studied by academia in a variety of ways depending on one's research community (Baines, Lightfoot and Smart, 2013; Vendrell-Herrero et al., 2014); however, it is fair to say that whichever community 'lens' is chosen all seek to determine the most appropriate methods for its adaptation and integration, as well as identifying any implications for manufacturers wishing to pursue such a strategy.

Scholars, such as Oliva and Kallenberg (2003); Baines et al., (2009); Gebauer, Paiola and Saccani (2013); Kohtamäki et al., (2013); and Parida et al., (2014) present this paradigm shift as a unidirectional one, where manufacturers '*transit from being a product manufacturer to a service provider*' (Oliva and Kallenberg, 2003, p. 161) along a continuum increasingly offering more complex and advanced services to their products. Although scholars such as Windahl and Lakemond (2010) contest that rather than advance in a unidirection from goods to services, '*firms developing integrated solutions need to balance elements of both goods- and service-logics, as well as manage the increased customer-supplier interdependencies that integrated solutions entail*' (ibid, 210, p. 1278).

Notwithstanding the zeitgeist for servitization, undertaking such a transition is complicated (Rabetino, Kohtamäki and Gebauer, 2017) and requires more than the simple conjunction of product and services (Baines and Lightfoot, 2013). To be successful at servitization requires firms to undergo not only a '*shift in their core competencies*' (Brax, 2005, p.146) but also changes to organisational structures, culture, and processes (Alghisi and Saccani, 2015; Baines et al., 2009; Gebauer, Fleisch and Friedli, 2005; Mathieu, 2001) as well as to business models (Neely, 2008; Visnjic and Van Looy, 2013; Visnjic, Wiengarten and Neely, 2016).

In practice, the implementation of a servitization strategy brings into an organisation unprecedented levels of complexity and ambiguity, which can be problematic (Brax, 2005; Gebauer, Fleisch and Friedli, 2005; Baines et al., 2009b; Raddats et al., 2016; Lenka et al., 2018). Gebauer, Fleisch and Friedli (2005); and Neely (2008) were amongst the first to identify that embedding a more service-focused business model into manufacturing was no guarantee of success.

In their seminal papers, Gebauer et al (2005) and Neely (2008) posited the concept of a '*service paradox in manufacturing firms*' (Gebauer, Fleisch and Friedli, 2005, p.15 and Neely, 2008, p.105) arguing that many manufacturers found it difficult to successfully exploit the financial benefits promised through servitization, citing issues ranging from industry maturity, type of competition, up-front costs, to Research and Development (R&D) intensity (Jovanovic, Engwall and Jerbrant, 2016). Additionally, the extent of organisational change necessary for servitization is extensive, presenting organisations with numerous extrinsic and intrinsic challenges to be overcome (Martin and Horne, 1992; Brax, 2006; Baines et al., 2009; Martinez et al., 2010b; Alghisi and Saccani, 2015; Story et al., 2017; Zhang and Banerji, 2017).

While many new challenges, such as '*adjusting to the role played by the client*' (Martin and Horne, 1992, p. 27) may be generally seen as extrinsic in nature, responding to them frequently results in organisations concomitantly facing similar challenges of an intrinsic nature, for example, the requirement to design new innovative business models, develop cultural and process change

initiatives as well as restructuring and, resourcing and skills alignment (Brax, 2005; Gebauer, Fischer and Fleisch, 2010; Barquet *et al.*, 2013; Peillon, Pellegrin and Burlat, 2015; Weeks and Benade, 2015).

Although the number of journal articles on servitization has increased exponentially over the years, Kohtamaki, Einola and Rabetino (2020) contend that much of this literature has been delimited by binary disjunctive 'either-or' thinking, with 'products' and 'services' at times often presented as two opposing poles vying for position within firms (product vs service divisions). However, in practice manufactures rarely choose between the two; instead move liminally from '*standardised to customised solutions*' for their customers (ibid, 2020, p.1). Consequently, with products and services seen as interdependent, it is this researcher's contention there is a need for organisations to understand and manage better the often competing and complex intra-organisational challenges presented either during the initial transition to a servitized entity or, as in this research, in the continued delivery of relevant product-service offerings to customers. Understanding such challenges is touted by many scholars as critical not only to an organisation's competitiveness but also to their very survival (Jarzabkowski and Sillince, 2007; Kraatz and Block, 2008; Smith, Binns and Tushman, 2010).

Today, manufacturers face not only intra-organisational structural complexity resulting from delivering advance services (Baines, Lightfoot and Smart, 2011a; Baines and W. Lightfoot, 2013; Lenka *et al.*, 2018b; Lightfoot and Gebauer, 2011; Salonen, Saglam and Hacklin, 2017a) but must also meet the external challenges resultant from operating in a complex and dynamic business environment. Consequently, both these exogenous and endogenous factors present organisations simultaneously with multiple latent and salient mutually causal challenges. Yet, despite such complexity much of the servitization literature presents these challenges in simplistic, reductionist terms, limited by assumptions of binary thinking and linearity (Quinn and Cameron, 1988). Such a view it will be argued is inappropriate for studying servitization challenges, instead what is required is a more holistic approach. An approach that recognises the complexity generated from the interconnected and interrelatedness nature of many of the intra-organisational structural challenges resulting from competing demands and the autogenous tensions frequently embedded within them, tensions which

can often conflict with or exacerbate one another. Consequently, what is required now is theoretical complexity to account for the organisational complexity being studied (Tsoukas, 2017) or as Weick (2007, p. 16) succinctly put it "*it takes richness to grasp richness*".

Within organisations inter-dependent activities generate ubiquitous tensions (Sleesman, 2019; Smith et al., 2017b; Smith and Lewis, 2011) and in delivering a servitization strategy manufacturers are frequently presented with such tensions; for example, the need for customised offerings - important in differentiation (Visnjic Kastalli, Van Looy and Neely, 2013) with the need for integration of standardised processes - important in the efficient design and delivery of the product (Kowalkowski et al., 2015). Responding to such conflicting demands can create tensions across various internal business functions as organisations attempt to manage the antithetical nature of these demands.

Additionally, such intra-organisational challenges can call into question management's traditional cognitive underpinnings when it comes to decision-making, as over-reliance of past experience may no longer be suitable in today's complex and ambiguous business environment (McKenzie et al., 2009) in which previous latent and interconnected tensions now become more salient as environment stimuli such as scarcity of resources, process complications, and organisational change initiatives present management with no easy solutions, and thus questions the traditional reductionist approach of seeking to "*simplify analysis and enable formulaic prescription but which ignores the significant influence of interactive dynamics*" (Marion and Uhl-Bien, 2001, p. 390).

Consequently, paradox theory, it will be argued, offers an alternative model to that espoused in so much of the extant organisation and strategy literature. As such, rather than situate competing demands as problems that require immediate solutions, it contends that in 'the age of modernity' there are no simple binary "either/or" solutions to many of the complex intra-organisational challenges that delivering a servitization strategy throws up. The premise being that as one examines the contradictory demands embedded within many of the challenges one becomes aware that their complex duality means not only are they contradictory in nature but also interdependent (Smith et al., 2017) and thus connotes many multiple tensions which often cannot be disentangled. Therefore, trying to reduce

them to simple 'either/or' choices neglects this interconnectedness which can result in mutually constitutive recursive cycles (both positive and negative) (Lewis and Smith, 2014).

Adapting to today's complex business milieu requires manufacturers to possess agile business models catering for a value proposition comprising a multitude of products and service offerings. Such a provision requires organisations to constantly undergo '*irregular and asymmetrical change*' (Fredberg, 2014, p. 172) as a result of trying to meet the increasing and often divergent demands of customers. Accordingly, the complexity organisations face in dealing with such challenges is enormous (ibid, 2014), yet not uncommon to many businesses. Indeed, operating in such complexity is often the norm for many in management - part of the fabric of today's organisation's life - in which '*only complex organisations can tackle complex problems*' (Cunha and Rego, 2010, p. 85) with '*the larger and more diversified the organization, the higher the complexity...*' (ibid, p. 172).

However, paradoxically, swaths of management literature, together with improvement techniques, such as Lean, appear to offer management the tools to rid themselves of such organisational complexity by the promise of simplifying structures, processes, and even management thinking. Yet, such a drive for disambiguation can inadvertently result in a counterfactual situation, in which '*complexity arises from simplicity*' (Gribbin, 2004, p.97 in Cunha and Rego, 2010).

Today, this drive for parsimony, one could argue, is present in much of the servitization literature, where the field is satiated with frameworks, models, and classifications that aim to guide organisations on how to configure a strategy to enable product-centric manufacturers to transition to a more integrated product-service model (Pieroni et al., 2016; Baines and Lightfoot, 2014; Baines et al., 2009b). However, as Lenkaet al., (2018) observed, "*whilst the co-existence of these conflicting orientations is a reality for manufacturing firms that are engaged in servitization, our knowledge about this situation is limited*" (ibid, p. 813), and as such a call has gone out from some scholars for alternative narratives in servitization research (Luoto, Brax and Kohtamäki, 2017; Rabetino et al., 2018).

In an attempt to answer this call, this thesis proposes paradox theory as a '*threshold concept*' (Meyer and Land, 2003, p.1) in which to study both the intra-organisational structural challenges innate in delivering a servitization strategy and the inherent tensions embedded within such challenges. Utilising a systematic literature analysis of both servitization and paradox research domains together with data gleaned from empirical research of a major manufacturing organisation, this research challenges the heterodoxy of the binary 'either-or' thinking in relation to servitization challenges and offers an alternative narrative in which to view and understand their nature, complexity, and interconnectedness.

1.2 Research Overview

One novelty of the study is that unlike much of the extant literature on servitization challenges, it explores the phenomena not from the perspective of a manufacturer undergoing the initial servitization journey but rather from an organisation that had been delivering such a strategy for over 30 years. Adopting a relativist, abductive, middle-range theory approach the study will, using a specific stratified cross-section of key management personnel within the case study organisation, seek to capture and understand how these senior management 'voice' and 'perceive' the situated entanglements their organisation is facing as the starting point to explore the phenomenon.

Moreover, through the novel use of a 'paradox lens' the intra-organisational structural challenges identified from the empirical case study are juxtapositioned against a conceptual framework developed from analysis of the servitization and paradox literature to uncover what, if any, competing, yet interrelated tensions embedded within the identified organisational challenges might contribute to some being recursive in nature. Figure 1.1 shows the process for such analysis.

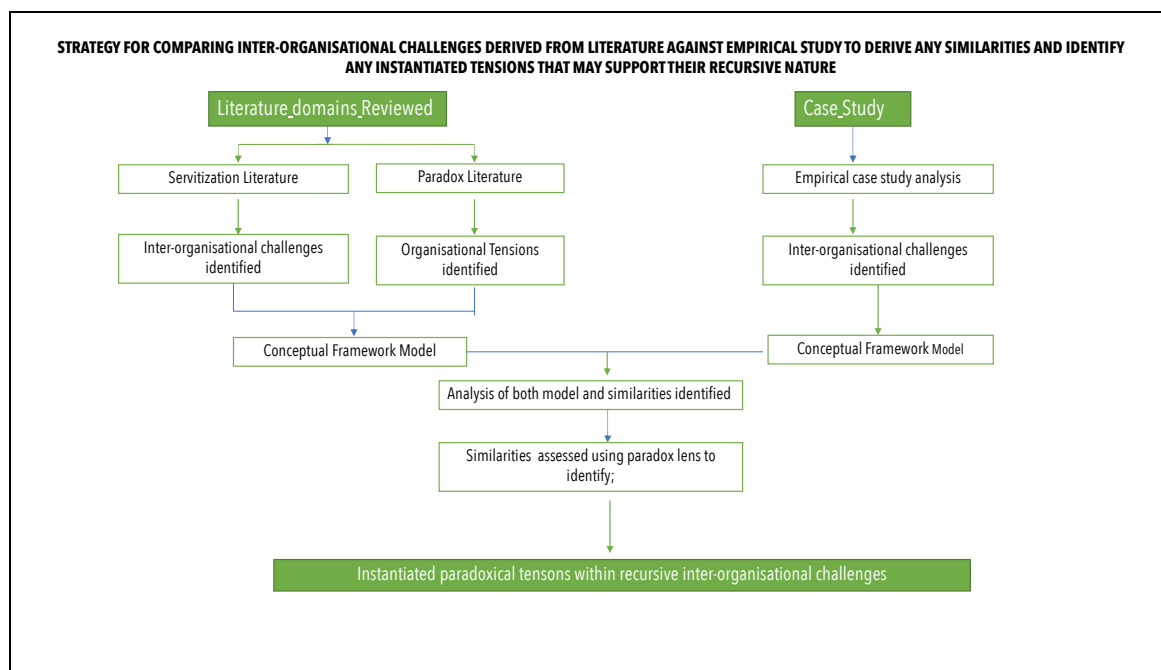


Figure 1-1. Diagrammatic overview of research process

This work contributes epistemically by responding to Smith and Lewis' (2011) call for empirical work to understand the nature of competing demands within workplaces, and Bartunek and Rynes' (2014) call to use tensions to explore research and theory building rather than treat them as dichotomies to be overcome. Moreover, it answers specifically Rabetino et al (2018) call to conceptualise paradoxes embedded in servitization, and Lenka et al, (2018) view that such insight from an individual's level on the challenges of servitization is still lacking in much of the extant servitization research.

As such this study contributes to both paradox and servitization knowledge. For paradox studies, it takes Smith and Lewis' (2011) conceptual model, builds upon it, and empirically evaluates its use by undertaking a contextual study into the situated intra-organisational structural challenges facing an established servitization manufacturer. The study contributes to servitization literature by systematic combining of a '*theoretical framework, empirical fieldwork and case analysis simultaneously*' (Dubois and Gadde, 2002, p. 554) to better understand what challenges and tensions are currently impeding an established servitization provider in contrast to one beginning the transition.

The utility of this research therefore lies in sharpening the focus on intra-organisational structural challenges within servitization by enhancing their conceptual clarity through holistic modelling within a framework of organisational tensions. The resulting typology offers a novel approach to capture and better understand how such challenges can be interrelated and interconnected, generating salient tensions which are not necessarily implicit at first glance, but whose presence can be the generative catalyst for certain recursive challenges.

1.3 Research Question

This study will answer the following research question:

“How does the intra-organisational structural challenges of an established PSS organisation compare with those of firms undergoing initial servitization transition, and why could instantiated tensions within such challenges support their recursive nature?”

Based on the findings, this study has the potential to develop an interesting and fruitful vein of further research within servitization studies, as well as advance paradox research by providing supporting evidence for the claim that *‘the tensions emerging from the servitization process, servitization could provide a valuable context to further develop paradox theory’* (Rabetino et al., 2018, p. 363).

1.4 Structure of the Thesis

This thesis is presented in seven chapters. The first chapter introduced the phenomenon of servitization and paradox theory.

Chapter 2 introduces the first stage of the Abductive approach: Element Identification by positioning the relevant literature domains and providing a theoretical foundation for this study and establishes a conceptual framework through the aggregation of the relevant concepts into a composite framework that frames the research and ascertains the research question.

Chapter 3 explains the methodology used to answer the research question. It provides an account of the empirical approach through a discussion of the research philosophy and design, and the data collection and analysis processes.

Chapter 4 presents Stage Two of the Abductive Approach – the exploratory analysis which discusses the coding of data and the coding framework.

Chapter 5 presents Stage Three of the Abductive Approach: Theory development (Findings). This chapter presents the results of the informed grounded theory coding stages, including the identification of the challenges under the framework's thematic headings.

Chapter 6 presents the research findings through which the themes are examined and examined alongside the research questions and the discourses identified.

Chapter 7 presents a discussion on the findings, it identifies a typology of challenges and impact-related tensions and discusses these in terms of recursive characteristics behind many of the challenges identified from a cross-case analysis of challenges identified from literature with those facing an established servitized manufacturer, linking the observations back to the relevant literature domains and knowledge gaps. Finally, it offers a summary of the study, its theoretical and practical contributions, including its limitations, and potential avenues of further interest are offered as suggestions for future research.

2 Abductive approach: Stage one - LITERATURE REVIEW

In chapter one, the position stated was that part of the research approach undertaken was abductive in nature. The rationale for this choice is explained fully in the methodology chapter but a key component of this approach is that it invites researchers to engage with scholarly literature at the outset of the research process, as opposed to inductive approaches which often advises engaging with literature at the end of the research project (Tavory and Timmermans, 2014a); indeed, scholars such as Eisenhardt and Graebner (2007) argue that rigorous empirical research needs to begin with a strong grounding in related literature.

Such early grounding in the domain literature is designed to *'map and assess the existing intellectual territory'* (Tranfield, Denyer and Smart, 2003. p. 208) to help develop a reliable knowledge base in which to formulate an appropriate research question. Dikova, Van Witteloostuijn and Parker (2017) not only support the value of researchers engaging with a research 'fields' literature but argue that in abductive reasoning such engagement is critical, sighting it as the first of abductive reasonings three key principles – that of element identification – which they describe as *'limited deduction in the form of the identification of the theoretical building blocks of a general framework to identify and select the elements that have to be utilized in the form of the identification of the theoretical building blocks of a general framework to identify and select the elements that have to be utilized in the empirical analysis'* (ibid, p. 407)

Accordingly, the two literature reviews undertaken in this chapter fulfil three purposes:

- First, the reviews present a comprehensive understanding of the research fields of interest; namely servitization and paradox. The first literature review looks at servitization from its earliest conception, through to the latest conceptual ideas, looking to provide a descriptive map of the phenomenon by illustrating the key business contexts which brought about the need for servitization; identification of the key definitions associated with servitization; the five communities within which servitization research has been conducted, and an exploration

of the different types of service offerings available to manufacturers. The second literature review explores the antecedents of paradoxical thinking, looking at socially constructed concepts such as dualism, dilemmas, and paradox; together with the various attempts of constructing a universally accepted definition of a paradox. Moreover, it will introduce the concept of organisational tensions as presented by Smith and Lewis (2011).

- Second, the systematic review will be used to identify gaps, contradictions, or inconsistencies in extant research which will help to refine the project research question.
- And finally, on completion of the two literature reviews, the 'Literature Review: Conceptual Developed Aggregate Synthesis' will conflate the two distinct domains of research and taking the identified themes, develop a conceptual research framework that will be used to inform and direct the empirical research.

2.1 Scope of Literature Review

Literature reviews form a crucial part of any research framework in that they provide the basis on which to justify one's research question(s) and build a research design (Bryman and Bell, 2011), which for this research required the engagement with scholarly periodicals on servitization and paradox with the goal of conflating the two distinct domains of literature in management studies: 'servitization' (within manufacturing) and 'paradox' (within organizational theory) in a hermeneutical exercise. This was achieved utilising Denyer and Tranfield (2009) five-step process for undertaking a systematic review: question formulation, locating studies, study selection/evaluation, analysis and evaluation, and reporting results. The timeline used for the literature reviews was 1988-2017 with the start date selected as representing the first use of the phrase 'servitization' in a published article (Vandermerwe and Rada, 1988).

To locate all relevant studies, a search strategy was conducted across management and scientific literature reported in peer-reviewed journals. An initial scoping of the literature, including the utilisation of previous systematic literature reviews on the topics (e.g. Baines et al., 2009; Bakker, 2010; Lewis, Andriopoulos and Smith, 2014; Lightfoot, Baines and Smart, 2013; Smith, 2014; Smith and

Lewis, 2011) were used to help identify a selection of keywords concatenated using "AND" and "OR" to create search strings for use in database searches, see Appendix A.

During the initial scoping exercise, one early anxiety concerned the fact that different researchers tended to use different words to describe the transition to services in manufacturing firms. Therefore, to achieve a more focused clarification, this review expressed the concept of "servitization" via four discrete search string interpretations: "servitization", "servitisation", "servicizing" and "servicising", utilising (*) and (?) to capture the various forms of words (e.g., use of plural) expressed in article titles and/or abstract descriptions.

Three leading electronic databases were selected to search for articles, written in English, whose titles, and/or abstracts contained at least one of the search terms active in the search strings. The databases (ABI/inform, EBSCO Business Source Complete, and Web of Science) were selected as they provide comprehensive coverage of the topics.

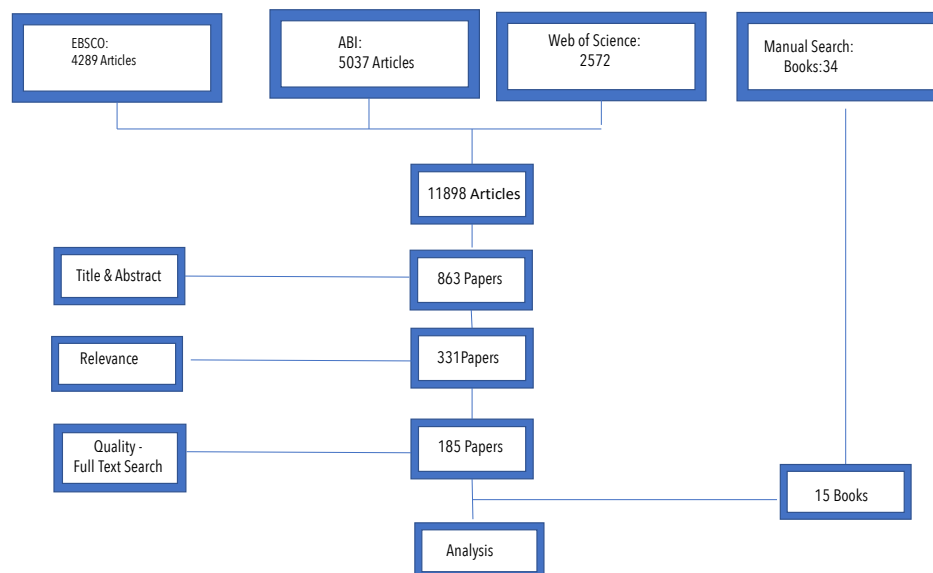


Figure 2-1. Search strategy

In line with other authors covering the domains of servitization and paradox (Baines et al., 2013; Smith and Lewis, 2011) the literature is assessed as widely distributed and studied from a broad range of

academic traditions. For the two domains researched, a dual and pragmatic approach to selection and evaluation of material was adopted. First, an initial screening was undertaken based on the relevance of an article's title and abstract and using specific inclusion and exclusion criteria, a copy of which is in Appendix B. Second, following the final selection of articles, a cross-case analysis (Mays et al., 2005) was undertaken to synthesise the two divergent literature domains. Data were extracted, utilising a specially designed Excel spread-sheet Pro-forma. The studies included were coded according to bibliographic characteristics, study design, quality, and strength of evidence (both explicit and implicit). A matrix-based technique for data analysis was then adopted, in which a posteriori knowledge was used to construct thematic categories from the data analysis to identify patterns in descriptions.

This flexible approach enables both descriptive and procedural knowledge to be combined. The data were extracted using first-order concepts/constructs, which were generally descriptive, and generated initial concepts identified in the review articles. A second-order review helped to elicit themes (or categories of strategic challenges), which subsequently were consolidated into a higher-level abstraction of aggregate themes which subsequently were used to build a research framework.

2.1.1 Summary of scoping activities

As previously stated, the literature review is conducted in three parts. The first part covers the domain of servitization research. The review sought to provide a descriptive map of the phenomenon, illustrate the key business contexts which brought about the need for servitization, identification of the key definitions associated with servitization, identify the research communities within which servitization research has been conducted, and identify and categorise the different types of service offerings available to manufacturers.

The second part of the literature review embraced the concept of paradoxes, looking at its antecedents and foundations. It sought to clarify the concepts of dualism, duality, dialectics leading to a usable definition of what constitutes a paradox, a definition that will be used as definitive in this research. The review looked at Smith and Lewis, (2011) conceptual framework of organizational paradoxes/tensions

presented under the themes: paradoxes of learning, paradoxes of organising, paradoxes of belonging, and finally the paradoxes of performing.

The third and final section of the review conflated the findings from the Smith and Lewis' typology of organising, performing, belonging, and learning tensions together with the four aggregated contextual strategic challenges identified via the servitization literature. The outcome of this activity enabled the researcher to create a reliable research framework in which to explore the intended research objectives and answer the stated research question.

2.2 Literature Review Part One: Element Identification - An introduction to the research domain of Servitization

This section sets out to describe and explore the literature surrounding servitization. It presents an understanding of the phenomenon and a brief introduction of why manufacturers undergo servitization. This is then followed by a look at the motivational drivers that lie behind manufacturers adopting a servitization business model. Acknowledging that the servitization of manufacturing is a mature area of research, this paper examines five diverse but interrelated research communities producing conceptual and empirical work in the field. It then examines several definitions around what constitutes a service offering and finishes with a review of the discussion surrounding the change of emphasis often required by manufacturing firms to deliver a successful servitization business model, namely the change from a goods dominant logic to a service-dominant logic (Vargo and Lusch, 2004, 2008).

2.2.1 Servitization Phenomenon

Since Vandermerwe and Rada (1988) exposed the phenomenon of servitization within manufacturing, research in this field has progressed continually, with the literature becoming replete with examples of manufacturers bundling equipment sales with support services (Vandermerwe and Rada, 1988) as a means to increase competitiveness via increased market share and improved customer satisfaction (Baines et al., 2009; Kastalli and Van Looy, 2013; Kreye et al., 2015; Kucza and Gebauer, 2011; Reinartz and Ulaga, 2008; Wise and Baumgartner, 1999).

Across the literature, it is clear that since the early work of Wise and Baumgartner (1999), that within manufacturing there is an appreciation of both the importance and value of services, particularly when linked to products, yet one of the problems regarding the topic lies in the fact that there has been little rigour in defining these key terms. Baines, Lightfoot, Benedettini and Kay (2009) acknowledge that the term 'services' is a phrase that is *'contentious, often used loosely and defined based on what they are not'* (ibid, p.554) arguing that 'services' is often referred to as an 'offering', for example in the term 'overhaul services'. Indeed, the word 'service' as a construct can be construed in many ways from a

description of how satisfied one was with a particular performed action, (for example, the supervisor answered my query promptly and efficiently) to a description of the activity (for example., a breakdown service, or a university IT department). In terms of servitization, it is the latter definition, that of the performance of an activity, that forms the focus of my interest; manufacturers increasingly offering the integration of services with products, and the challenges and tensions such an activity places on an organisation.

However, the integration of a product-service strategy is more than simply 'adding' services to a product; at its core is a requirement for manufacturers to fundamentally rethink their business model, to move away from transactional-based services to a more customer-focussed output (Oliva and Kallenberg, 2003; Jovanovic, Engwall and Jerbrant, 2016). Consequently, servitization as an activity is forcing firms to confront challenges to their *modus operandi*, ranging from changes to their business model to changes in organisational structures, operational processes and culture (Baines et al., 2009a, 2017; Bigdeli et al., 2017; Martinez et al., 2010; Zhang and Banerji, 2017).

2.2.2 Why Servitization?

Although Vandermerewe and Rada (1988) are credited with first describing how firms could move from a product-centric entity to one offering a combination of "*bundles*" of customer-focussed combinations of goods, services, support, self-service, and knowledge (Ibid, p. 314), the concept of service growth in manufacturing can be traced back much further. Schmenner (2009) acknowledges that research on service growth in product firms began proliferating from the mid-1980s, but its antecedents go back much further, over 150 years in fact, and can be traced back to the rise of the railroad and the telegraph businesses in the United States of America. Here, the propagation of these networks presented traditional manufactures with the opportunity to vertically integrate into areas traditionally seen as services, such as marketing, sales and repair services (Kowalkowski, Gebauer and Oliva, 2017).

Today, such vertical integration has become common for many manufactures, for as Levitt's (1972) aphorism extolls '*everybody is in services*' (Ibid, 1972, p.42). Indeed, today when talking about a value-

added component to a firm's strategy, such a component is more likely to come from the addition of services than just a product-centric offering (Quinn, Doorley and Paquette, 1999).

Recognising the value of services to a product is one thing, but for manufactures, success in the transition from a previously product-centric firm to one offering a mix of product-service services is not guaranteed. To start, manufacturers need an effective implementation strategy, ensuring, for example, that the organisation is aligned both structurally and culturally with its new business logic (Martinez et al., 2010a), it requires the organisation to invest in learning new people skills, building new technologies and capabilities (Reinartz and Ulaga, 2008), together with a clearly articulated business plan setting out how the organisation will achieve growth, productivity and profitability (Carlborg, Kindstrom and Kowalowski, 2014; Löfberg, Witell and Gustafsson, 2015; Storbacka et al., 2013; Visnjic and Van Looy, 2013).

Today, such a 'transitional shift' towards service-based business models is often presented in the literature as critical for manufacturing's future in the twenty-first century (Baines and Lightfoot, 2014; Neely, 2008; Foresight, 2013; Baines, Lightfoot and Smart, 2013); however, research has also shown that some firms are unable to make such a transition easily or indeed be capable of controlling the amplified uncertainties and risks attendant with implementing a servitization strategy. These risks could, if not managed properly, prevent a manufacturer from achieving the desired benefits of servitization (Neely, 2008) raising the prospect of what Neely refers to as '*the Service Paradox*' (ibid, p.105), presenting a very real threat to a firm's survival (Benedettini, Neely and Swink, 2015).

2.2.3 Literature on motivators for Servization

In reviewing the servitization literature many articles include a brief discussion on the motivations of the manufacturer but in general all draw on the work of Wise and Baumgartner (1999), and Oliva and Kallenberg (2003) into three principal motives, namely: a competitive motive, demand-based motives, and economic motives (Raddats et al., 2016). In a similar vein, Baines et al. (2009) proposed a typology of three organisational drivers that motivate manufacturers to pursue a servitization strategy.

These drivers he referred to as: financial, strategic and marketing (Mathieu, 2001; Oliva and Kallenberg, 2003; Gebauer and Fleisch, 2007; Rousseau, Manning and Denyer, 2008; Salonen, 2011; Kinnunen and Turunen, 2012; Kowalkowski, Gebauer and Oliva, 2017) and are examined in more detail in the following sub-sections.

2.2.3.1 Literature on financial drivers

Throughout much of the literature, the financial motivator is presented as a rationale for manufacturers to achieve both higher profits and a more sustainable and stable income stream (Wise and Baumgartner, 1999; Gebauer, Fleisch and Friedli, 2005; Slack, 2005; Eggert, Hogreve, Ulaga and Muenkhoff, 2011) helping them to balance the effects of dynamic economic cycles and mature markets (Brax, 2005; Malleret, 2006). As far back as 1999, academics such as Wise and Baumgartner (1999) were advising that *"the combination of stagnant product demand and an expanding installed base has pushed economic value downstream, away from the manufacturing and towards providing services required to operate and maintain products"* (ibid, p.134) they concluded that the services share of GDP was growing significantly and manufacturing was losing out, in fact by 1999 manufacturing had dropped to just 17% of GDP, by 2015 it accounted for just over 9% ([World Bank](#)) and has remained close to that mark ever since.

Services it was deemed offered the opportunity to redress this balance and manufacturers with a broad set of service offerings were viewed as the most likely to succeed in delivering increased profitability (Eggert et al., 2011, 2013). Such a view therefore would seem to suggest that firms with limited offerings may struggle to servitize successfully. However, even with a broad portfolio of service offerings, there is no guarantee of profitability (Neely, 2008).

Overall, the literature posits an unpredictable relationship between servitization and performance, and addressing this issue for firms is not straight forward. Some authors believe that successful servitization can only be achieved once firms' achieve a critical mass of some 20-30% of their overall turnover through services before any benefits are possible (Fang, Palmatier and Steenkamp, 2008; Suarez, Cusumano and Kahl, 2013). Indeed, in industries such as aerospace manufacturing the increased life-

cycle of engines and airframes is pushing revenue generation further downstream and into in-service support services (Ward and Graves, 2007). Consequently, the relationship with servitization and a firm's profitability is both complicated and not guaranteed, a point Gebauer (2005) and Neely (2008) identified as a "service paradox" where the higher costs related to the provision of services may increase a firm's revenue but counterfactually might impact negatively on a firm's profitability (Baines and Lightfoot, 2014).

2.2.3.2 Literature on strategic drivers

Across the literature, strategic drivers for servitization are largely concerned with gaining competitive advantage (Baines, Lightfoot, Benedettini and Kay, 2009), primarily through the use of differentiating service offerings (Mathieu, 2001; Gebauer and Fleisch, 2007). The rationale for this lies in the interpretation of services being an intangible commodity and thus less likely to be imitated successfully (Oliva and Kallenberg, 2003; Gebauer and Fleisch, 2007). However, some scholars (for example, Frambach, Wels-Lips and Gundlach, 1997; Mathieu, 2001; Gebauer and Fleisch, 2007) have commented on the fact that the increased commoditisation of markets has resulted in a firm's maintenance of a competitive edge through cost offerings and product innovation becoming more difficult; moreover, Frambach, Wels-Lips and Gundlach (1997) comment that the value-added properties of some strategic drivers can increase the barriers to entry (Mathieu, 2001).

2.2.3.3 Literature on marketing drivers

The marketing drivers are those services used to sell the product (Gebauer and Fleisch, 2007; Baines, Lightfoot, Benedettini and Kay, 2009); which traditionally manufacturers have seen as a "*necessary evil in the context of marketing strategies*" (Baines, Lightfoot, Benedettini and Kay, 2009, p. 555). In product-centric firms' value is achieved through the sale of the product, with services a mere add-on offering to the original product (Gebauer, Fleisch and Friedli, 2005); however, the marketing benefits of services is that a service orientation can help sell more products (Mathe and Shapiro, 1993).

Today, marketing is used to extoll the value of services and is seen as a differentiating factor within a product-service offering (Baines and Lightfoot, 2013), often reducing the role of the product to a mere part of a firm's integrated offering (Oliva and Kallenberg, 2003). Within the marketing literature, it

appears that the consensus is that for firms' to be successful at servitization requires a shift from transactional marketing to relational marketing (Neely, 2008). If marketing can achieve this 'shift' then firms can gain significant service-based advantages through closer ties to customers (Vandermerwe and Rada, 1988; Wise and Baumgartner, 1999; Corrêa, Ellram, Scavarda and Cooper, 2007). Furthermore, the literature highlights that increased customer interaction firms' enables firms' to utilise this knowledge to adapt their offerings to suit customers' emerging needs, achieved by a more sophisticated approach to customer management data analysis (Baines et al., 2009).

2.2.4 Literature on research communities

The phenomenon of servitization or as it later became known "*servitization of manufacturing*" (Lightfoot, Baines and Smart, 2013, p.1) is a field of research that has a 'broad church' when it comes to what is being studied; it has at various times been referred to by academics as a "*trend*" (Vandermerwe and Rada, 1988, p. 314), a "*generic term*" (Slack, 2005, p. 326), a "*model*" (Robinson, Clarke-Hill and Clarkson, 2002, p.149), "*servitization strategy*" (Åhlström and Nordin, 2006, p.78; Neely, 2008, p103), a "*process*" (Brax, 2005, p. 143) and "*phenomenon*" (Neely, 2008, p. 104), to name but a few. Indeed, such a variety of views is not just limited to definitions of terms but also applies to a variety of research perspectives. Lightfoot, Baines and Smart (2013) in their systematic literature review identified no less than five distinct but interrelated, research communities expressing an interest in the servitization phenomenon, communities of interests they called: Services marketing, services management, operations management, service science and product-service systems. Detailed below is a brief synopsis of the research perspectives from these communities.

2.2.4.1 Literature on services marketing

This community of researchers primarily evolved from the marketing discipline. Their interest lies in the exchange and distribution of products (Taylor, 1936); however, over the years the influence of Kotler (1967) and his 'marketing mix' began to shape market thinking. and later Drucker's (1954) work began to move the focus to that of satisfying the customer.

However, by the late 1970s people like Shostack (1977) was calling on services to break-free from the traditional product marketing paradigm noting that "*the classical 'marketing mix,' the seminal literature, and the language of marketing all derive from the manufacture of physical-goods*" (ibid, p.73), and arguable he achieved a seminal breakthrough when there was general agreement within marketing that services were something different to products (Shostack, 1977). By the 1980s the perennial debate about goods versus services was seen by many as at last at an end (Vargo and Morgan, 2005), a view supported by the analysis of the field by Fisk, Brown and Bitner (1993) and Berry and Parasuraman (1993).

Through authors like Shostack (1977) and Gummesson (1993) the 'either-or' views of products verses services finally gave way to an acknowledgement that while there was a difference there was also a symbiotic connection between them, a connection based on the premise that the purchase of a product could also lead to the development of a long-term customer relationship, where services could be offered over an extended period of time (Levitt, 1983); thus, finally moving marketing focus away from one of a transactional to one of a relational focus.

Within the marketing domain, Shostack (1977) and Levitt (1983) are seen as two of the principal scholars credited with moving the field of marketing into two new areas of study: services marketing and relationship marketing (Baines *et al.*, 2009). Services marketing scholars such as Fisk, Brown and Bitner (1993) contend that the marketing of services and goods are distinctive because services in their eyes are viewed as IHIP features (*intangible, heterogeneous, inseparable and perishable*) (ibid, p. 68) and extensive literature reviews by the likes of Zeithaml, Parasuraman and Berry (1985) and Edgett and Parkinson (1993) confirmed the four key characteristics of IHIP is now accepted into the services marketing paradigm.

However, the IHIP view was not without detractors. Lovelock and Gummesson (2004) challenged the idea that any four specific features could make services different from goods arguing that these key characteristics failed to cover all the different types of services now available. Instead, they offered an alternative perspective, proposing that any interactions that do not involve the transfer of ownership

from manufacturer to the customer are overwhelmingly different to those that do and that consequently, service provision offers benefits not through ownership but rather through '*access or temporary possession*' (Baines, Lightfoot and Smart, 2013, p. 1411).

Relationship marketing can be perceived as part of the developing '*network paradigm*', one that recognises that world trade and competition is something that takes place increasingly between networks of firms (Thorelli, 1986. p. 47). Morgan and Hunt (1994) comment such a perspective also "*refers to all marketing activities directed toward establishing, developing, and maintaining successful relational exchanges*" (ibid, 1994, p. 22). At about the same time, Vargo and Lusch (2008) also challenged the then dominant economic model of exchange, in which the unit of analysis was seen as the product, and whose logic was based on '*tangible resources, embedded value, and transactions*' (ibid, 2008, p. 1). In challenging this product-centric dominant logic they proposed an alternative concept, one of a service led-dominant logic. In this logic, the focus shifted from tangibles towards intangibles, such as skills, information, and knowledge, what Vargo and Lusch referred to as '*operand resources*' citing them as '*fundamental source of competitive advantage*' (ibid, 2008, p. 6) where a firms focus shifts from the value being seen embedded in the product to one where value is co-created with the customer (Vargo and Lusch, 2004).

2.2.4.2 Literature on services management

Services Management research, one could argue, began when this community of scholars broke what Gummesson (1994) called the existing paradigm. Emerging from the domains of operations and strategy its interest lies in service organisations and organisational culture rather than addressing the goods or service dichotomy.

Its rationale for research can be summarised by Levitt's (1973) aphorism that today "*everybody is in service*" (ibid, p. 2) and his seminal paper, 'The Industrialisation of services' (Levitt, 1976) which even at the time of his writing acknowledged that the services sector had been in ascendancy for almost 75 years; something which has continued apace today with western industrial societies seeing services as

a major contributor to GDP output; indeed, the Financial Times in 2016 noted that services accounted to close to 80% of the UK's GDP [Financial Times \(2016\)](#).

Such a paradigmatic shift captured the attention of academics, and as far back as the 1980s where arguable Service Management effectively established its own identity as a field of research (Heineke and Davis, 2007), and expressing a view that tradition product-centric manufacturing was outdated (Gummesson, 1994), arguing for a greater understanding of the role and impact of services. From my literature review findings, it could be argued that Chase and Garvin's (1989) work 'The Service Factory' was seminal in identifying that service tasks could no longer be neatly separated from the tasks of the factory and was a key influencer in changing the focus of operations management literature, which until then had traditionally focused on the utilisation of manufacturing-based concepts in a service environment (Voss, 1992).

Baines *et al.*, (2009) and Baines, Lightfoot and Smart (2013) identified several authors who have addressed how a services strategy can be delivered within a servitization construct. For example, Silvestro *et al* (1992) proposed three types of service models: professional services, service shop and mass services (*ibid*, 1992, p. 73).

Collier and Meyer (1998) called for the development of a meaningful positioning matrix for services observing that whilst many have attempted developing a classification scheme for services none had received unanimous acceptance. In response, they proposed their own model for service organisations to follow and aide them in determining the most appropriate service offering depending on ascertained customer needs. At around the same time, Kellogg and Nie (1995) developed a service process/service package matrix to help '*service firms increase their strategic insights by aligning the type of service package offered with the type of process used to create the service and to have a better understanding of their service operations strategy*' (*ibid*, 1995, p. 323).

Finally, in 2007, Heineke and Davis (2007) in their paper 'The emergence of service operations management as an academic discipline' presented a systematic history of the evolution of services management and concluded that today, more than ever, there is a '*...need for a trans-disciplinary*

approach appropriately suited to its particular characteristics... as "service operations have evolved from simply applying basic manufacturing concepts in a service environment ...' (ibid, 2007, p. 364)

2.2.4.3 Literature on services operations management

From the latter part of the 20th century to the present day, services have been growing in nearly all industrial societies, right from Levitt's (1976) paper 'The industrialisation of services', the study of services has been a burgeoning academic field of research, particularly as the number of people working in the services sector now outnumbers those in traditional industries [UK Govt Figures: Employment by sector](#). Indeed, as far back as 1965, economist Victor Fuchs wrote an article, 'The Growing Importance of the Service Industries,' (Fuchs, 1965) in which he termed the phrase '*service economy*' (ibid, 1965, p. xxiii) to describe this area of employment. Although operations management as a field has its roots in manufacturing, Sasser (1976) argues that immediacy makes service industries distinct from manufacturing although Baines, Lightfoot and Smart (2013) argue that in terms of servitization the '*broad field of operations has complemented its traditional focus on production... with an emphasis on operations management and strategy*' (ibid, 2013, p.1412).

In the early days of service operations management, there was limited publication on the subject but Levitt and Sasser Jr from Harvard, Chase from the University of Southern California, and Fitzsimmons from the University of Texas produced some of the seminal papers of that era (Heineke and Davis, 2007). Levitt's contributions 'The Production Line Approach to Service' (1972) and 'The Industrialization of Services' (1976), were germinal papers that brought about a raft of new research looking at how the service sector could learn from and applying lessons from manufacturing. Sasser's (1976) paper in contrast sought to show how services were quite different from manufacturing environments and is credited with the antecedent work in the development of yield management (Heineke and Davis, 2007). Fitzsimmons work was primarily focussed on applying operations research techniques to the healthcare industry, but in 1982, he is credited with publishing the first textbook focused on service operations: *Service Operations Management* (Fitzsimmons and Sullivan, 1982).

After Vandermerwe and Rada's (1988) seminal work 'Servitization of Business' there was a marked rise in publications on services operation management, primarily concerned with the strategic importance of services for example, 'The Service Driven Service Company' (Schlesinger and Heskett, 1991) and 'Winning the Service Game' (Schneider and Bowen, 1995). It was at around this time, the importance of services as a competitive advantage for manufacturing firms began to blossom. Today, academics such as Baines et al, (2007) promote a now almost established perspective that the shift from selling products to selling integrated offerings of products and services is what servitization is all about.

With the recognition of this paradigmatic shift, Tukker (2004) identified eight product-service system models along a product-service continuum ranging from product-related services through to "*services with tangible goods as an add-on*" (Baines, Lightfoot and Smart, 2013, p. 1412) as ways in which firms could deliver these offerings, but critically only by establishing within them a customer-centric focus; one with the goal of providing customers with a "*desired outcome*" (ibid, 2013, p. 1412).

In reviewing the literature, best practice in this area has often been described through the activities of larger organisations such as Rolls Royce, Alstom and ABB, Thales (ibid, 2013) and is presented as evidence that traditional manufactures are engaging with service led strategies having moved along the continuum from product-centric organisations to delivering more '*customised solutions*' (Kohtamaki, Einola, and Rabetino, 2020, p. 1).

Within academia and business, the concept of a service-led manufacturing strategy has gained significant prominence over the last 20 years with contributions from the likes of Wise and Baumgartner (1999); Brax (2005); Gebauer, Fleisch and Friedli (2005); Slack (2005); Jacob and Ulaga (2008); Neely (2008); Baines et al. (2009) and Schmenner (2009) to name but a few, and of special interest is PSS, what Baines, Lightfoot and Smart (2013) describe as organisations '*where the manufactured product is central to the provision of an integrated set of services (e.g. maintenance, repair, support, availability and capability contracts)*' (ibid, 2013, p. 1412). A practical example of such an integrated product-service offering can be found within the case study 'CareStore's' offerings, with the aim being to provide operators with a wide range of different solutions available throughout their

product's lifecycle via innovative and flexible services such as TotalCare Life, TotalCare Term, TotalCare Flex, SelectCare, LessorCare and Foundation Services. This approach to servitization is an important area of '*activity and interest within the service operations management community*' (Baines, Lightfoot and Smart, 2013, p. 1412).

2.2.4.4 Literature on services science

Services science has its antecedents from the Information Technology domain, developing as a field of interest around the early twenty-first century (Baines, Lightfoot, Benedettini and Kay, 2009) and is viewed as emerging from several disciplines (Baines *et al.*, 2009; Lightfoot, Baines and Smart, 2013; Spohrer, Giuiusa, Demirkan and Ing, 2013) blending insights from disciplines as diverse as *service marketing, operations, service computing, service design, service economics, service engineering and service information* (ibid, p.561) and is predicated on service-dominant logic (Vargo and Lusch, 2004) promoting service as the essential element in all exchanges between manufacturer and customers (Spohrer and Maglio, 2010; Vargo and Lusch, 2004). Moreover, rather than focus on one aspect of service, it adopts a holistic approach seeing service science as a system of interrelated and interconnected parts of a business's functions (Chesbrough and Spohrer, 2006).

Service science today recognises that service exchange is complex and difficult, and growth in the utilisation of IT systems results often in new levels of coordination complexity. However, it is this volume of available data that could be combined to enhance decision-making and improve customer experiences lies at the heart of the aim of service science; seeking a sort of conflation of technology, organisation and business processes into a comprehensible science of service (Baines *et al.*, 2009).

Indeed, Baines, Lightfoot and Smart (2013) acknowledge that the pursuit of such an outcome resulted in the recognition and development of a new multidisciplinary services focused research community composed of both academics and practitioners under the umbrella name of (SSME). SSME is an acknowledgement that services now contribute more to the economy of developed countries than manufacturing. As such, there is a growing recognition within manufacturing for the need for wider communication and education on the value of services across the business, to embrace a holistic

analysis of management, engineering and social sciences, with the aim of broadening the scope of engineering training to one that embraces engineering and services training (Larson, 2008).

So far the literature reviewed has explored the evolution of the services in traditional manufacturing organisations culminating in firms now being exhorted to integrate product and services (Baines et al., 2007; Cook, Bhamra and Lemon, 2006; Martinez, et al., 2016; Mont, 2002; Ward and Graves, 2007) as a means to sustain competitiveness. The literature suggests that organisations wishing to pursue this strategy undergo what Vandermerewe and Rada (1988) presented as a three-stage process. First, the organisation must be a product producer, then it seeks to combine its core product with additional services, and finally the organisation combines product and service offering, into more complex offerings for customers. It is at this final stage the phenomenon of product service systems (PSS), described by Baines et al., (2007) as a special case of servitization due to the change in emphasis by the manufacturer from '*sale of product*' to '*sale of use*' (Johnstone, Dainty and Wilkinson, 2008) becomes of interest in this research.

2.2.4.5 Literature on Product Service Systems (PSS)

The use of the term PSS first occurred in the late 1990s (Goedkoop et al., 1999) with the concept originating in Scandinavia and northern Europe. This research community was primarily concerned with the idea that various combinations of a physical product and intangible services could provide benefits across the economic, environmental, social and industrial sustainability spectrum (Baines, Lightfoot and Smart, 2013; Reim, Parida and Örtqvist, 2015). PSS is based on a proposition that says that 'value' is based on the users' needs as opposed to the product (Baines et al., 2007); in essence, a consumer's need is met by selling utility instead of providing a product.

In reviewing the literature, there appears to be little agreement on a universally accepted definition of PSS, as can be seen from the plethora of options available from a variety of research communities, Table 2-1 refers. However, the most cited definition is that of Goedkoop et al. (1999) who described the concept as "*a marketable set of products and services capable of jointly fulfilling a user's needs, provided by either a single company or a strategic alliance of companies*" (p.111). Since the late 1990s this

research community has seen seminal papers from authors such as Mont (2002), Manzini, Vezzoli and Clark (2001) and Tukker (2004) help establish the PSS field as a growing academic discipline, a view supported by literature reviews from the likes of Baines *et al.*, (2007); Beuren, Gomes Ferreira and Cauchick Miguel (2013); Reim, Parida and Örtqvist (2015) and Annarelli, Battistella and Nonino (2016).

PSS is seen by many authors as a competitive proposal that can be used to satisfy customer demand (Beuren, Gomes Ferreira and Cauchick Miguel, 2013) although some academics such as Baines *et al.* (2007) posit that the role of PSS goes beyond that and is primarily concerned with sustainability. Whatever the debate it is clear that PSS offers an opportunity for manufacturers to acquire a competitive edge as well as pursue a balance across economic, environmental and social priorities (Yang *et al.*, 2009). That said, even though PSS started out as primarily concerned with sustainable business practices as its *raison d'être*, as the field has grown an argument can be found that such a narrow focus is no longer the primary concern of this field of research any more (Annarelli, Battistella and Nonino, 2016).

Table 2-1 Extract of common PSS definitions from literature 1999 to 2016

Authors	Definition
(Goedkoop et al., 1999)	A marketable set of products and services capable of jointly fulfilling a user's needs, provided by either a single company or a strategic alliance of companies
(Manzini, Vezzoli and Clark, 2001)	A business innovation strategy offering a marketable mix of products and services jointly capable of fulfilling client's needs and/or wants, with higher added values and a smaller environmental impact as compared to an existing system or product.
(Mont, 2002)	A system of products, services, supporting networks and infrastructure that is designed to be: competitive, satisfy customer needs and have a lower environmental impact than traditional business models.
(Manzini and Vezzoli, 2003)	A product service system (PSS) can be defined as "an innovation strategy, shifting the business focus from designing (and selling) physical products only, to designing (and selling) a system of products and services which are jointly capable of fulfilling specific client demands"
(Brandstotter and Haberl, 2003)	PSS consists of tangible products intangible series, designed, and combined so that they are jointly capable of fulfilling specific customer needs. Additionally, PSS tries to reach the goals of sustainable development.
(Tukker, 2004)	A system consisting of tangible products and intangible services designed and combined so that they jointly can fulfill specific customer needs
(Halme et al., 2006)	Products and services which can simultaneously fulfil people's needs and considerably reduce the use of materials and energy.
(Morelli, 2016)	An advanced industrialised solution based on collaboration between social players, which gives rise to both effective and efficient, highly contextualised services.
(Baines et al., 2007)	PSS is an integrated product and service offering that delivers value in use. A PSS offers the opportunity to decouple economic success from the material consumption and hence reduce the environmental impact of economic activity.
(Evans, Partidário and Lambert, 2007)	An attempt to use existing industrial and commercial structures to create radically environmentally improved products by treating them as services.
(Neely, 2008)	A Product Service System is an integrated product and service offering that delivers value in use.
(Jiang and Fu, 2009)	Industrial PSS can be defined as a systematic package in which intangible services are attached to tangible products to finish various industrial activities in the whole product life-cycle.
(Zhu et al., 2011)	PSS is defined as a solution for optimal resource operations in product life cycle through integrating tangible products with intangible services.
(Boehm and Thomas, 2013)	A Product-Service System (PSS) is an integrated bundle of products and services which aims at creating customer utility and generating value.
(McKay and Kundu, 2014)	PSS is a system composed of a physical product and associated services that support the product through life.
(Reim, Parida and Örtqvist, 2015)	PSS are defined as a marketable set of products and services capable of jointly fulfilling customers' needs in an economical and sustainable manner.
(Annarelli, Battistella and Nonino, 2016)	PSS is a business model focused on the provision of a marketable set of products and services, designed to be economically, social, and environmentally sustainable, with the final aim of fulfilling customer's needs.

2.2.5 Literature on types of service offering

Servitization is founded on the concept that firms move along a "*continuum*" (Shostack, 1977, p. 75; Oliva and Kallenberg, 2003, p. 161) where manufacturers move from a product to service orientation in an incremental and linear movement via a range of integrated product and service offerings (Lightfoot and Gebauer, 2011). A key factor determining a firm's progress is that services do not remain homogenous (Visnjic, Wiengarten and Neely, 2016), but rather adaptable to the customer requirements (Kerr and Ivey, 2001). Thus, service offerings change as they progress along the 'continuum' moving as they do from *'transactional-based models to more "value in use" business models* (Baines and Lightfoot, 2013, p. 8) recognising that today's customers are looking for greater flexibility both in products and services offered (Goedkoop et al., 1999; Mont, 2002). According to the literature, Tukker (2004) presents the most cited description of this journey under three types of service offering, or as Reim, Parida and Örtqvist (2015) referred to them as business models: product-oriented PSS, use-oriented PSS and result-oriented PSS.

- Product oriented Product-Service System seeks to provide in addition to the sold product some form of services directly related to the product. In this scenario the ownership rights are transferred to the customer, leaving the provider with delivering upon an agreed aftercare services package, e.g., maintenance and support.
- Use oriented Product -Service System ownership of the tangible product is retained by the service provider and makes the product available through the use of rental or leasing agreements (Tukker, 2015).
- Result oriented Product-Service System seeks to provide the customer with a defined and agreed upon outcome, thus replacing the need to individually own a product, e.g., cleaning services. In this scenario, the ownership rights stay with the provider, with the customer paying for an agreed upon service delivery.

Lightfoot, Baines and Smart (2013) see these three stages as an evolutionary process in which manufacturers endeavour to build capabilities across three broad service levels: "*base*" (focussing on the provision of the product), "*intermediate*" (focussing on maintenance, repair, and overhaul), and "*advanced*" (focussing on the provision of product availability, performance or output (Baines et al., 2013, p. 638; Lightfoot, Baines and Smart, 2013, p. 1425). Moreover, as firms move along the continuum it becomes more complex as the nature of the relationship with the customer develops and although (Kowalkowski et a., 2015) may contest the unidirectional nature of the 'product-service continuum', there nevertheless appears substantial agreement that the nature of such classifications assist in the development of different product-service strategies.

Irrespective of which approach an organisation adopts concerning the interpretations above, a key observation is that they are not equifinality. Servitization is a paradigm shift that has at its core the simple belief that for a manufacturer to succeed now requires them to put themselves in their customer's shoes and see themselves through their eyes. Therefore, there can be no optimal strategy for servitization; indeed, contingency theory supports this by informing us that an optimal strategy is one dependent on contextual and contingent factors (Donaldson, 1996) and as Porter (1985) acknowledges, are industry dependent.

What is clear is that adopting a servitization strategy has big implications for manufacturers in how they innovate and exploit the opportunities that such a paradigm shift offers. Greater customer intimacy lies in much of the development of customised offerings. Manufacturers, through the development of a closer relationship with their customers, seek to offer solutions that are based on customer needs and increased '*value proposition to their customers*' (Baines and Lightfoot, 2013, p. 64). Ultimately, moving along the 'product-service continuum' enables manufacturers to expand their portfolio of service offerings to increasingly take a larger share of their customers operations.

2.2.6 Literature on the evolution of goods-dominant logic to service-dominant logic

From the early 18th century the prevailing view within manufacturing, up to the latter part of the 19th century, was that the exchange value resided in a product, and was only tradeable when it could be exchanged for something else, usually money (Ng *et al.*, 2012). This narrow view of economic exchange was based on the seminal work of Adam Smith (1776) and was written from a historical context of Empire. In his book, 'The Wealth of Nations', Smith argued that wealth was the result of the value paid of a tangible surplus of products for export. It wasn't that Smith thought services were not useful, it was just that in his opinion they added little value to the wealth of a nation (Vargo and Morgan, 2005). Such an assessment, one could argue remains prevalent in much of today's business thinking (Ng *et al.*, 2012), encapsulated in what Vargo and Lusch (2004, p. 2) call a "*goods-dominant logic*" (G-DLogic).

In this context, a dominant logic refers to "*shared mental maps*" (Ng *et al.*, 2012, p. 418) which presumes understandings and learning are shared and developed throughout an individual's career producing a common organisational 'mindset' that helps them understand how their business operates and their role in its objectives and output. Indeed, in 2008, Vargo and Lusch posited that there were only two logics related to services: the first, sees products as the value of exchange (G-DLogic) and the other, a counter-paradigmatic concept referred to as a service-dominant logic (S-DLogic) presents service as the primary value of exchange (Vargo and Lusch, 2004, 2008).

S-DLogic is propositioned as a novel lens, one markedly different from the traditional G-DLogic view (Vargo, 2011), reflecting that in S-DLogic, service is defined as "*the application of competences (knowledge and skills) for the benefit of another party*" (Vargo and Lusch, 2008, p. 256). This meaning of 'service' (singular) should not be confused with the more commonly used 'services' (plural), which reflects a particular type of (intangible) good (output), which is often used in service(s) marketing and which Vargo and Lusch (2004) see as traditionally associated with G-DLogic.

In utilising an S-DLogic, manufacturers value is co-created with customers rather than held in the product, in essence, a shift in the value of exchange (Vargo and Lusch, 2008). Moreover, S-DLogic recognises that operant resources (*resources that require action to make them valuable*) are replaced by higher-order competencies of operant resources (*often invisible and intangible resources such as skills, knowledge, or information*) (ibid, 2008, p. 256). S-DLogic is not presented as a new theory, more a change in mindset (Vargo and Lusch, 2008).

However, such a shift in mindset from G-DLogic to one of S-DLogic is not without difficulties (Ng *et al.*, 2012) and across the servitization literature it is clear that one of the most important challenges facing a firm wishing to embrace a servitization business model is that of changing employees mindsets, (see Salonen, 2011; I. Ng *et al.*, 2012; Wallin, Parida and Isaksson, 2015; Baines *et al.*, 2017; Kowalkowski, Gebauer, Kamp and Parry, 2017).

Consequently, Vargo and Lusch (2008) proposed that a firm cannot satisfy a customer on its own but can only deliver co-created outcomes. They offer such S-DLogic captured in ten foundational premises (FPs), as introduced in Vargo and Lusch (2004) and revised in Vargo and Lusch (2008) (Table 2-2 refers).

The proposition that there is a concurrence of service logic has garnered many comments from the academic community; some positive, some supportive, if not favourable, and others ranging from cautious to critical (Vargo and Lusch, 2008; Vargo, 2011).

Vargo and Lusch (2006, 2008) have always claimed that they do not 'own' S-DLogic but rather its value is one of open-source progression, where the authors have sought to refine and enhance their original ideas by addressing and, where valid, integrate their responses to concerns of other scholars to devise a holistic understanding of the nature and scope of S-DLogic. Although the authors do not present S-DLogic as a theory; they do see it as a useful framework for thinking about how the world works (Vargo, 2011). Table 2-2 presents a set of foundational premises for S-DLogic derived from Vargo and Lusch's work (2004, 2006, 2008).

Table 2-2 Ten Foundational Premises

Foundational Premise	Action
FP1	Service is the fundamental basis of exchange
FP2	Indirect exchange masks the fundamental basis of exchange
FP3	Goods are a distribution mechanism for service provision
FP4	Operant resources are the fundamental source of competitive advantage
FP5	All economies are service economies
FP6	The customer is always a co-creator of value
FP7	The enterprise cannot deliver value, but only offer value propositions
FP 8	A service-centred view is inherently customer oriented and relational
FP9	All social and economic actors are resource integrators
FP10	Value is always uniquely and phenomenologically determined by the beneficiary

SOURCE: NG et al (2012, P.421)

2.2.7 Summary of Servitization literature review

This first section of the literature review presented a comprehensive review of the literature surrounding servitization. It covered an understanding of the phenomenon and a brief introduction explaining the logic of why manufacturers adopt a servitization strategy, looking the motivational drivers that lie behind the adoption of a servitization business model. It explained that much of the conceptual and empirical work in servitization could be examined from the perspective of five diverse but interrelated research communities. It then went on to examine several definitions around what constitutes a service offering, finishing off with a review of the discussion surrounding the perceived need for manufacturers to change from a G-D logic to a S-D logic.

In section 2.3 next, Part Two of the literature review continues with an exploration of the literature from the domain of paradox studies.

2.3 Literature Review Part Two: Element Identification - An introduction to the research domain of paradox

This introduction to the research domain of paradox offers a brief guide to the rich philosophical foundations upon which the study of organisational paradoxes is built. The aim is not to provide an exhaustive review but rather one that offer a lens in which to view the philosophical roots that form the basis of the meta-paradigmatic nature of paradox. That said, the review does highlight how paradox development has been built on the rich philosophical roots across the domains of tensions, contradictions, dualism, paradox, and logic, as well as being informed by such fields such as Eastern philosophy: Taoism, Confucianism, and Buddhism, and the Western philosophical influences of existentialism and dialectics. The systematic overview of the language is useful as it highlights what Smith and Lewis, (2011, p. 385) bemoan as '*the lack of conceptual clarity within the field*'. However, these overlapping concepts are nevertheless important to understand as they frequently pervade much of the paradox literature.

2.3.1 Why Study Paradox

Paradoxes have a long history in philosophical and rhetorical fields of study (Poole and van de Ven, 1989) and we frequently face them as part of our life experiences; indeed, from the moment we are born we are asked to confront the core existential paradoxes that in birth we start the inexorable journey to death (Hampden-Turner, 1981; Rescher, 2001). Within OM literature the study of paradoxes goes back as far back as the 1980s, where utilisation of the term paradox began to be seen across several journals as many academics became exasperated with "*some of the most frustrating issues*" concerning organisations and their effectiveness (Cameron, 1986, p. 540) .

Academics across the paradox domain believe that paradoxes are ubiquitous in organisations (for example see Lewis, 2000; Smith and Lewis, 2011; Kozica and Brandl, 2015; Gaim and Wåhlin, 2016; Knight *et al.*, 2016) although they often remain latent only becoming salient through processes of change (Smith and Lewis, 2011). Indeed, authors such as Quinn and Rohrbaugh (1983) and Ford and Backoff (1988) demonstrated that organisational effectiveness was inherently paradoxical, with Quinn and Cameron (1988) drawing together some of the leading proponents of paradoxical thinking at that

time into a seminal book that set out the foundational roots of the research field. Today, organisations are seen as complex, dynamic systems and whilst scholars have long considered how organisations differentiate between competing demands caused by exogenous and endogenous factors, less well understood is how those competing demands could be integrated back into an organisation to power long-term success (Knight and Harvey, 2015).

In OM theory, arguably the dominant early paradigm concerning organisational efficiency was that of contingency theory (Smith and Lewis, 2011; Knight and Harvey, 2015) in which a firm's reaction to organisational tensions was seen to be strongly influenced by its relationship with its environment (Lawrence and Lorsch, 1967), with theorists advocating that organisations adjust their structures to cater for their specific circumstances (ibid, 1967).

Such a rationalist and/or contingent view is consistent in most papers reviewed in this study, frequently advocating the resolution of organisational challenges in terms of binary schemas (either-or solutions), where management are encouraged to identify the pros and cons of distinct choices, to address challenges currently facing the organisation, and consequently select an option that delivers the greatest fit. Indeed, such a view still remains prevalent in much of OM theory (Ashcraft and Trethewey, 2004).

However, today such views are being challenged as more and more organisations are having to adopt to increasing and novel pressures both externally and internally as a result of operating in complex and fast moving environments bringing to the fore the irrationality of competing demands from a multiplicity of shareholders and the pluralistic cultures embedded within the organisation (Tse, 2013; Martin, 2007).

Traditionally, when faced with such complexity and competing demands leaders were prone to employ binary thinking, a process well establish and rooted in formal logic (Ford and Ford, 1994); however, scholars now question whether our explanations for the understanding of complex phenomenon are, in fact, being limited by our assumptions of linearity (see Smith, Binns and Tushman, 2010, Smith and Lewis, 2011), and its *"logic of exclusion"* (*"either/or"*) (Nasim and Sushil, 2011, p. 192). Some scholars

suggest that what is now required is a more holistic approach to our understanding of complex phenomena, and propose that the metatheorizing perspective of paradox is just such a solution (Smith and Lewis, 2011; Lewis, 2000).

It is therefore posited that current OM thinking is ill-equipped to appreciate and accommodate the complexity so often characterised by a world of uncertainty and ambiguity. Paradox theory offers management an alternative frame from that of traditional formal logic to view the antinomies facing individuals, teams and manufacturing organisation across their entire value chain; extolling that in today's fast moving, complex, business environment identifying and managing these tensions may well be critical to business outcomes (Burton et al., 2016). However, first we need to clarify our understanding of the term paradox, in short, clarify the definition.

2.3.2 Literature on defining paradox.

Paradox as a term has a rich intellectual history whose antecedents have been used to define paradoxes, demonstrate different ways of dealing with them, and discriminate between different types of paradox and all contributing to initial theory building in OM studies (Schad, 2017).

However, over the last few decades the term has come to represent an overused and undefined management cliché for describing oppositional forces within organisations that typified that in business paradox is the new normal (Handy, 1994).

Throughout literature there have been numerous conceptions of paradox from a diverse range of communities, and prior to Smith and Lewis's (2011) integrative work paradox studies up to this point arguably were pre-paradigmatic; consequently, it is no wonder that a variety of definitions as to what constituted a paradox existed. Smith and Lewis (ibid) acknowledge such, contending the '*lack of conceptual clarity in this field is evident in the varying language adopted to describe tensions*' (ibid, p. 385), while Putnam et al., (2016, p. 68) bemoaned the '*conceptual malaise*' in the organizational literature and urged researchers to '*sharpen their definitions*'. Table 2-3 provides illustrations of the variety of definitions for describing paradox ex-ante Smith and Lewis's (2011) paper.

Table 2-3 Examples of paradox definitions in literature

Author(s)	Definition
Cameron (1986)	Paradox involves contradictory , mutually inclusive elements that are present and operate equally at the same time.
Ford and Backoff (1988)	As something that is constructed by individual when oppositional tendencies are brought into recognisable proximity through reflections or interaction.
Rosen (1994)	The dynamic tension of juxtaposed opposites
Eisenhardt (2000)	Paradox is the simultaneous existence of two incompatible states .
Clegg et al, 2002	Paradox can be viewed as two opposite poles that are at the extremes of a continuum.
Smith and Berg (1990)	A statement or set of statements that are self-referential and contradictory and that trigger a vicious cycle.
Poole and Van de Ven (1989)	A paradox, also called an antinomy, is a real or apparent contradiction between equally well-based assumption or conclusions.
Quine (1996)	Paradox as a conclusion that at first sounds absurd but later a reasonable argument can be presented to sustain it.
Lewis (2000)	cognitively or socially constructed polarities that mask the simultaneity of conflicting truths.
Luscher, Lewis and Ingram (2006)	Paradox denotes the simultaneous mutually exclusive elements - demand, emotions, perspectives, ideas.
Dell (1981)	Paradox as a subjective phenomenon that exists in the minds of the beholders.

Smith and Lewis (2011) sort to sharpen the definition and after reviewing the extant paradox literature, proffered a more encompassing definition of a paradox as a set of '*contradictory yet interrelated elements that exist simultaneously and persist over time*' (ibid, p.382). Such a definition highlights three components crucial to identifying a paradox; namely: (i) the contradictory yet interrelated elements that may present themselves as logical when viewed individually, but when juxtaposed appear illogical or even incredulous (Lewis 2000), (ii) that such tensions exist simultaneously (Lewis, 2000) and (iii) they operate in multiple timeframes (Smith and Tushman, 2005).

The term 'para' meaning 'beyond or contrary to', and 'doxa' which translates to opinion originated from ancient Greece (Chen, 2008) and from its early origins represented a situation that was beyond reason or logic (Poole and van de Ven, 1989). The philosophical foundations of paradox owe a great deal to the intellectual heritage of both western and eastern philosophy (Smith and Berg, 1987; Quinn and Cameron, 1988; Poole and van De Ven, 1989; Lewis, 2000). It was from such work that definitions of paradox began to emerge (Lewis, 2000) as well as ideas on to engage with and respond to paradoxes (Van de Ven and Poole, 1988) laying the antecedents for paradox as a an areas of research.

As paradox will be utilised in this research as a 'theorising tool' that embraces multiple paradigms (Lewis and Smith, 2014) understanding its roots is crucial, as such the next section provides a short synopsis of the development of paradox as a concept through the theoretical constructs of tensions, contradictions, and dualism and the adaption of ideas and concepts taken from the fields of Western and Eastern philosophy.

2.3.3 Literature on the antecedents of paradox: Defining tensions

Tensions can be described as '*two co-existing contradictory forces with conflicting goals*' (Fang, Chang and Peng, 2011, p. 774) often resulting in individuals struggling to cognitively process their experiences resulting in anxiety, frustration, uncertainty and even leading to feelings of paralysis (Smith and Berg, 1987; Kahn, 1990; Vince and Broussine, 1996; Lewis, 2000). In today's fast paced, global and competitive world these tensions can be exacerbated by the challenges of resource constraints, new market competitors and the drive for innovation, all of which can provoke even greater and more varied competing demands on management (Smith and Lewis, 2011) and echoes the evident tensions in servitization between products and services (Vinit Parida, Sjödin, Wincent and Kohtamäki, 2014; Huikkola, Kohtamäki and Rabetino, 2016; Kohtamäki, Einola and Rabetino, 2020).

Within the academic literature tensions can be divided into two theoretical constructs: inherent features of a system or socially constructed. Clegg (2002) defined this distinction as *Material (inherent in the external world)* or *Representations (social constructs)* (ibid, 2002, pp, 496-497). Lewis and Smith (2014) went on to further imply that an organisation's struggle with complexity and ambiguity is a

natural phenomenon of operating in a business environment, and by management accepting such a perspective will help organisations to reframe competing tensions such as stability and change (Farjoun, 2010), and exploit and explore (Raisch et al., 2009; Raisch and Birkinshaw, 2008) as inherent features embedded in complex human systems. Indeed, certain paradox scholars make the claim that paradox is '*inherent to the nature of the phenomenon*' (Johnston and Selsky, 2006, p. 185-186). Eisenhardt's (2000, p. 703) definition of a paradox as the "*simultaneous existence of two inconsistent states... [a] duality of coexisting tensions*" is typical of this group.

A socially constructed view on the other hand perceives tensions from the perspective of individuals failing to situate the construction of paradoxes or dualism as the tension between two opposing poles within a particular time or space (Poole and van de Ven, 1989) which according to Hahn, Pinkse, Preuss and Figge (2014) is the outcome of individuals having different cognitive frames acting as "*filters that admit certain bits of information into the strategizing process while excluding others*" (Porac and Thomas, 2002, p.178). Ford and Backoff (1988), for example, present paradox as '*some "thing" that is constructed by individuals when oppositional tendencies are brought into recognizable proximity through reflection or interaction*' (ibid, 1988, P.82). The common factor amongst authors who adopt such views is that they observe tensions, oppositions or contradictions within social systems and frame them as paradoxes (e.g. Poole and van de Ven, 1989; Dunford and Palmer, 1998; Lewis, 2000).

Whilst the academic output from these two contrasting lenses (paradoxes as systems or socially constructed) have produced some rich insights in the field of paradox studies (see Clegg, da Cunha and Cunha, 2002); Smith and Lewis (2011) argue that the ontological debate regarding divergent definitions has run its course, is no longer helpful, and '*fractures the literature*' (ibid, 2011, p385). Accordingly, they proposed that paradoxes be seen as BOTH inherent AND socially constructed. The logic for such an integrative model stems from their argument that whilst tensions are inherent in social systems, they remain latent until acted upon by environmental factors such as change, scarcity, plurality or an individual's cognition which then has the effect of then making them salient.

2.3.4 Literature on defining contradictions

Contradictions is another term that has been used in OM literature and indeed is a key constituent of Smith and Lewis's (2011) definition of paradox. Contradiction can be said to be the starting point for the conceptualisation of paradoxes; as Poole and van De Ven (1989) posit paradoxical tensions can be seen as the resultant outcome of the contradiction between two '*internally consistent theories of limited scope*' (ibid, 1989, p. 562). Lewis and Dehler (2000) support this view arguing that '*comprehending paradox begins with an understanding of contradictions*' (ibid, 2000, p.711) and argue that unlike the unidirectional nature of contingency theory, contradictions denote both sides of the same coin.

However, learning to live with contradictions is problematic. According to Bateson (1972), managing paradox requires a total emersion with the challenges being faced and for an actor to '*reclaim the emotions and attributes that have been repressed, polarized, or projected elsewhere to explore contradictions*' (ibid, p. 712); in essence, face the chaos head on. He argues that it is only through this self-reflection can actors achieve the necessary insight to challenge and reframe a previously unidirectional mind-set. Indeed, Rothenberg (1979) saw this ability to understand and live with contradictions as an essential element to 'paradoxical thinking'.

Yet, within the OM literature there is a plethora of definitions of what constitutes a contradiction, for example, Putman (1986) refers to them as 'diametrically opposed and mutually exclusive choices', others see them as '*opposite sides of the same coin; the more actors move toward one pole, the more they feel pulled toward the opposite*' (Putnam, Fairhurst and Banghart, 2016, p. 74). Nevertheless, despite no universally accepted definition of contradiction scholars generally subscribe to the view that contradictions refer to opposing poles that are interconnected with each other and have the potential to negate each other (ibid, 2016). As such, contradictions are seen as the '*roots of paradox and dialectics*' (ibid, p.74).

2.3.5 Literature on defining dualism/duality

The term dualism rather like contradiction and paradox has a variety of conceptual definitions, but in general refers to opposite poles, binary relationships or bipolar opposites (Bisel, 2009; Nasim and

Sushil, 2011). Dualism emphasises an interdependent relationship between opposite, competing, and mutually exclusive poles. Dualism scholars have frequently drawn on the seminal work of Giddens (1984) and Bourdieu (1977) when looking at the organisational binary relationships that exist within organisations such as stability-change, exploit-explore or differentiation-integration. Duality scholars promote the interaction between contradictory elements as being '*mutually constituted and ontologically inseparable*', such that it would be impossible to describe one without the other (Schad, Lewis, Raisch and Smith, 2016, p.11). Ford and Backoff (1988) describe four types of dualisms: Synchronic, diachronic, vertical, and horizontal.

- **Synchronic.** A synchronic dualism refers to where both poles temporal nature is presented as simultaneous (they occupy the same space and time). Such a perspective can be seen in Smith and Lewis's (2011) definition of a paradox where '*interrelated elements that exist simultaneously*' (ibid, p. 382).
- **Diachronic.** Diachronic dualisms on the other hand relates to a position where there is a temporal separation between poles, so for example Quinn and Cameron (1988) offer up as an example the debate between strategic choice and natural selection (p.87).
- **Vertical and horizontal.** Vertical and horizontal dualities relate to 'east/west' and 'north/south' poles. A vertical duality is one with alternating energy flows where once you have reached the north pole for example, further travel is prohibited unless one heads to the south pole. As such vertical dualities are limited; whereas horizontal dualities are seen as being able to travel in an easterly or westly direction forever.

Dualities, irrespective of the type clearly '*are capable of establishing a tension field of opposites*' (ibid, p. 87) such as in servitization between differentiating and integrating (Gebauer, Gustafsson and Witell, 2011), change and stability (Leana and Barry, 2000; Farjoun, 2010) or in product and services (Baines and Lightfoot, 2013). Firms are therefore full of dualities, formed from the tensions arising from the nature action of organising and can be seen therefore as forces that need to be balanced (Gaim and Wåhlin, 2016). Smith and Lewis (2011) view dualities as being bounded internally and externally, with

internal boundaries creating a distinction and an external boundary as something that encourages synergies.

2.3.6 Eastern philosophical influences

Historically, East and the Western thought have adopted two divergent philosophical paths when it has come to managing complexity and uncertainty. In the West, we have tried to diminish the impact of complexity and uncertainty through adoption of formal logic as the primary paradigm for attempting to reduce and eliminate ambiguity within our lives. To that end we have arguably had much success where we have seen extraordinary advances in technology and modern sciences in the West. However, in the East, rather than try to reduce or eliminate complexity and uncertainty they have attempted to embrace it through their own philosophical traditions (Li, 2016), such as Taoism, Confucianism and Buddhism.

2.3.6.1 Literature on Taoism.

Eastern philosophers have long influenced paradox thinking whether it be philosophers such as Lao Tzu or Confucius who suggest that the world is full of interdependent contradictions (Chen and Edu, 2002) and that all universal phenomena have competing tendencies. The Chinese philosophical tradition provides a perspective that allows for the resolution of these opposing voices by embracing, integrating, and transcending apparent opposites, as opposed to the Western Aristotelian analytical approach which sees contradictory propositions as unacceptable by the laws of formal logic and consequently the western response to such contradictions is to adopt a binary logic of 'either-or' solutions to decide which of the conflicting propositions is correct (Peng and Nisbett, 1999).

In contrast, Eastern philosophical traditions the emphasise of the integration of contradictory elements as the norm rather than the exception, perceiving them as 'both/and', and symbolized by the well-known Taoism symbol of Yin and Yang, Figure 2-2 below.



Yin and Yang's dynamic rotational symmetry interplay is captured by the ancient Chinese symbol often referred to as "diagram of the Supreme Ultimate". The diagram represents the dark of yin and the light of yang. Its cyclical nature is demonstrated by the ideal that as the yang returns to its beginning, the yin is at its maximum. The two dots represent the concept that when either reaches its maximum it contains within it the seed of its opposite.

Figure 2-2. Yin and Yang Symbol

Taoism can be interpreted as a philosophical belief in which the universe is guided by a single universal principle, the Tao. Taoism believes that all change can be traced back to the dualistic concept of Yin-Yang, a concept that describes how seemingly opposite or contrary forces may be complementary, interconnected, and interdependent, in real life. Yin is customarily viewed as representing the earth, the feminine, the moon, completion, coldness, and darkness. Yang, on the other hand is seen to represent the principles of heaven, the masculine, the sun, creation, heat, and light (Mattsson and Tidström, 2015). Consequently, in figure 2-2, the black and white parts of the Yin-Yang symbol is representative of a holistic worldview based on embracing interdependent opposing elements (ibid).

2.3.6.2 Literature on Confucianism

One of the primary differences cited between Eastern and Western thought lies in the opposing views on communication. In the East, the emphasis is on social relationships and their maintenance whereas in the West the emphasis is on individualism (Yum, 1998). In a highly critical book, Hall and Beardsley (1965) commented on the fact that in comparison with East Asian countries, the USA is in the stone age when it comes to social relationships. It is in this background of social organisation and individual conduct that Confucianism has not only survived for over a thousand years but has established itself in the East as the basic social and political value system (Yum, 1998).

The cardinal principle of Confucianism is that it is a philosophy of human nature, "*which considers human relationships as the basis of society*" (ibid, 1988, p. 377) and at least three of the four principles of Confucianism deal directly with social relationships and are grounded in the Five Codes of Ethics of Confucianism, namely: loyalty, closeness between father and son, distinction in duty between

husband and wife, obedience to orders and mutual faith between friends (ibid, 1900, P.376). Schad (2017) comments that the core ideas presented in Confucius' four books is that "*moral conduct lies in a balanced, middle way*" (ibid, 2017, p. 31) in essence stressing harmony in thought and conduct, though embracing opposites.

2.3.6.3 Literature on Buddhism

Rather like Confucianism, Buddhism also promotes the 'middle way', it teaches moderation or balance (not going too far one way or the other). Buddhists believe that nothing is fixed or permanent and that change is always possible, they believe that life is endless and that it is one in which impermanence, suffering and uncertainty are what mark out human life and in Buddhism are called the *talakhana* (three signs of existence).

Existence is the outcome of an individual's reincarnation and their preordained destiny to experience suffering throughout many lives. Life is seen as impermanent because nothing lasts forever and believing that things last is a chief cause of suffering. The constant struggle with change and stability is presented as a key characteristic of this state of suffering; accordingly, to rid oneself of this endless cycle of reincarnation and suffering, which is the ultimate goal of a Buddhist, can only be achieved through enlightenment (Nirvana). Nirvana is the last of Buddhas 'four noble truths', in which the way to stop karma and the endless recycling of suffering and rebirth is to stop focussing on trying to change things around one; rather focus on changing how one's mind interprets things. In essence, look to change the way one interprets things.

2.3.7 Western Philosophical influences

In the West it can be argued that the philosophical influences that have dominated our thinking have been very much influenced by the methodology of logical analysis rooted in the epistemology of rational reductionism as well as the ontology of realism-relativism separation, both of which lie at the core of the Western philosophical traditions. The roots of Western thought that have influenced paradoxical thinking are explored below:

2.3.7.1 Literature on logic

The field of logic has made an important contribution to the study of paradoxes with its heritages dating back to pre-Socratic times. Throughout its history the subject of logic has been characterised by frequent debates seeking to define just what the subject deals with. From around 1100-1700 in medieval Europe logic was based on Aristotelian logic and the writings of the early Christian teachings with its primarily function to defend and stress tradition and dogma. Aristotle, considered by many to be the father of formal logic (Rescher, 2001) saw formal logic as fundamentally concerning itself with *"what or who something is or is not"* (Ford and Backoff, 1988, p. 93) something Aristotle called the *"law of non-contradiction"* in which he argued that contradictory ideas cannot both be true and not true at the same time (Braathen, 2016; Priest, 1995) as such reasoning contradictions were seen as systemic incongruities that the logical tradition tries to *"suppress to avoid ontological distinctions of being and non-being to exist at the same time"* (Braathen, 2016, p. 2); or simply something is either "A" or "not A" but cannot be both (Lebeck and Voorhees, 1984).

In terms of business thinking, a criticism marshalled at formal logic is that such a position does not consider temporality and as such is problematic when examining organisational change (Horn, 1983) for as the process of change involves a change of state becoming something else, in formal logic terms "A" becoming "Not A", formal logic cannot cope grasp the concept of transformation, it struggles to comprehend the notion of 'becoming' (Ford and Backoff, 1988).

However, in his Critique of Pure Reason, Kant provides an alternative perspective to that Aristotle's version of formal logic. This magisterial apercu concerned the concept of antinomy as *"a logical contradiction... in which there is contradiction between two principles or inferences each of which seems equally necessary or reasonable, but which cannot both be true as neither of them provides all the insights. A frequently occurring distinction is that an antinomy is inconsistent, whereas a paradox may be only seemingly so."* (Erickson and Fossa 1998, p. 12).

To address the inconsistency of antinomies Kant proposed a transcendental approach, where opposing ideas or arguments are maintained in creative tension with one another (Harmons, 1995). The 'liar

paradox' of Epimenides is presented as a classic example of a logic paradox and was first studied around 400BC by the Megaric philosophers. The premise behind the paradox is someone who claims 'I am lying' cannot logically be telling the truth, they are in fact *"leading one in strange loops between honesty and falsehood"* (Smith *et al.*, 2017, p.303), the statement in essence contests the orthodox idea of what constitutes a true and false statement, due to the fact that they are at the same time both true and false.

2.3.7.2 Literature on existentialism

At its core existentialism places the individual at the centre of enquiry to account for life's different struggles. It was recognised as a cultural movement, flourishing in the 1940s and 1950s, predominately in Europe with nineteenth century philosophers Søren Kierkegaard and Friedrich Nietzsche seen as precursors of the movement. Existentialism has been criticised for being a philosophy of the absurd and despair, although just what existentialism is remains open to debate, in fact It is far from easy to say what existentialism represents or in fact whether it is a philosophical movement at all (Ashman and Winstanley, 2006). Indeed, Kaufmann (1975) went so far as to say that: *"Existentialism is not a philosophy but a label for several widely different revolts against traditional philosophy."* (Ibid, 1975, p.11).

Nevertheless, many academics would agree that existentialism at its core is about dealing with the immediate experience of living in the world, as opposed to simply theorizing about it. Rescher (2001) argues that at its core lies the fundamental paradox of birth and death; in essence, the ontological concept of nothingness, in which from the point of view of human existence an individual at the moment of birth arises from nothing and starts the...." *unavoidable transit towards death*" (p.120), i.e., rises from nothing and returns to nothing!

Kierkegaard (1954), articulates a similar point of view, explaining the 'existence paradox' as a persistent ebb and flow between oppositional forces, specifically the finite and infinite in human life. For existentialist, such a view is countenanced because as human beings we are aware that our time is limited that the choices we make in life bear such weight. It is this awareness and acknowledgement

of our own finite existence, and our inevitable and unavoidable journey to death that makes every one of life's choices so significant and full of importance.

For existentialist, it is this key concept of nothingness that provides human beings with the freedom to make those decisions and is a core tenant behind the anti-determinism of existentialism (Ashman and Winstanley, 2006) and is in existential philosophical literature a common framework in which a protagonist searches for the meaning of life in adversity.

Another author credited with being from the existentialist perspective is Camus. In one of his few purely philosophical works, *The Myth of Sisyphus* (Camus, 1975) he deals with the subject of the 'absurd'. Sisyphus, a Corinthian King, is a robber and murderer who holds the gods in disdain and because of his crimes the gods decide to punish him. Accordingly, the gods, acknowledging Sisyphus lust for life, decide a suitable sentence is to have him push a huge boulder to the top of a steep hill for all eternity.

Camus's work explores the paradox of Sisyphus' punishment, and argues that it is only in the acknowledgement of the pointlessness of this task that gives Sisyphus his strength. He recognises at that moment the absurdity of his existence yet acknowledging this absurd state Sisyphus feels he is master of his own fate – and from this he draws strength; Camus is thus demonstrating that because life has no predetermined meaning (the existentialist definition of absurd), Sisyphus is free to give life whatever meaning he chooses. Accordingly, *"Kierkegaard and Camus both introduce us to the paradoxicality of human existence and individual responses to it."* (Schad, 2017, p. 32).

2.3.7.3 Literature on dialectics

The dialectic has a long intellectual history from Plato, through the middle ages, to the present day, where it is commonly associated with the work of Hegel and Marx (Lourenço and Glidewell, 1975). It is primarily concerned in Western philosophy with the dynamic interplay of opposition, contrast, and contradiction as well as to the unity of opposites (Bledow et al., 2009). In Eastern philosophical and intellectual tradition, the importance dialectics is placed more generally on the acceptance and open-

mindedness of contradictions rather than the Western approach of triadic progression from thesis, antithesis to resolution through synthesis (Nisbett et al., 2001).

In the Eastern philosophical thought, there is no necessary incongruity between the belief that "A" and "not A" both have merit. Indeed, the Tao or yin-yang principle, discussed previously, sets out the argument that the opposite of a state of affairs can exist simultaneously with the state of affairs itself (Chang, 1939; Mao, 1937/1962), for example, accepting the proposition that two parties involved in a dispute can both have right on their side, or that two opposing propositions can both contain some truth. This is what lies behind the Chinese thought of the '*Middle-way*' (Nisbett, Peng, Choi and Norenzayan, 2001, p.294).

From a Western perspective, the foundation of dialectics begins in Ancient Greece in the works of Plato, Socrates, and Aristotle, who represented dialectics as a logical arguments structure (Schad, 2017). From the outset, dialectics has had a definitional issue with the term being seen as "*neither clear nor univocal*" (Zeitz, 1980, p. 73). Although often imbued with a variety of meanings (Schneider, 1971); nevertheless, dialectics is presented not as a theory but more a meta-theoretical perspective (Clegg and Cunha, 2017) . Dialectics in the context of organizational studies literature is, more often than not, represented by Hegel's (1969) notions of thesis, antithesis, and synthesis as the unity of opposites (Bledow et al., 2009; Seo, 2002). Hegel regarded dialectics as 'the absolute truth' (Hegel [1812], 1998), in which he accepted contradictions in formal logic (Schad, 2017).

Contradictions in this context can be defined as "*dynamic tensions between opposite elements that together form a unity and logically presuppose each other for their very existence and meanings*" (Hargrave and Van de Ven, 2016, p. 320). The rationale behind dialectics is one based on a desire to overcome dualism through a process in which one element or 'affirmation' (thesis) unintentionally gives rise to its own 'negation' (ibid) or (antithesis), whose contradictions are integrated to a higher-level thesis through synthesis. The synthesis that settles the contradictions between the thesis and antithesis however is never fully resolved as it is said to contain elements of truth from both the

synthesis and antithesis, as a consequence the resulting synthesis will form the next thesis, which in turn results in another antithesis (Bledow et al., 2009).

Dialectics can thus be said to a process of 'becoming' as the synthesis is an outcome of the change process with each part of the dualism containing elements of the old and new at the same time which are necessary to form a new whole or '*gestalt*' that neither side could have produced itself (Lourenço and Glidewell, 1975, p 490; Schad, 2017). However, Smith and Lewis (2011) argue that dialectical synthesis is in fact only a temporary solution as it retains the underlying core tensions (Hargrave and Van de Ven, 2017).

In dialectical theory, power is seen to be initially focused behind either the thesis or antithesis. Whichever one is seen as dominant inevitably invites support for the contrary element, which according to Hegel is logically as behind both the thesis and antithesis lies incomplete information, so for example organisational stability invites the need for change, over emphasis on shareholder value can see a rise in interest in other parties' interests (e.g., social impact or employee concerns).

In Western philosophy, dialectical thinking can be thought of as expressing reality as in a constant state of flux, where conflicting and contradictory forces underlie the dynamic nature of human thinking and reality (Engels, 1940). It is from this perspective that Marx, who cites Hegel as a principal source in the development of his dialectics, enters the story. Whilst Hegel's view of dialectics is rooted in formal logic, Marx, whilst retaining the basic triadic structure of thesis, antithesis and synthesis nevertheless differed from Hegel in that he believed that dialectics are rooted in what he called historical materialism (Monk, 1996) in which the interplay of social arrangements generate inner contradictions that fuel societal changes (Morgan, 1998).

2.3.8 Paradox literature summary

Smith and Lewis (2011) acknowledge that the drive for a more comprehensive understanding of paradox was the result of what they perceived as a lack of conceptual clarity around the subject for many years, resulting in a myriad of terms describing oppositional forces within organisations including 'tensions', 'contradictions' 'dualities', 'dilemmas and 'paradox'. Many scholars even today use such

terms interchangeably, whilst others have highlighted the differences within the terms. Consequently, for this thesis it was felt necessary to clarify their meanings and make key distinctions amongst the constructs that helped shape paradox theory and in doing so 'pin my colours' to a definition of paradox.

However, in affirming one interpretation over others grants the chosen definition a primary cognitive value, and as such '*any effort at definition domesticates, analytically fixes, and mobilizes pro and contra positions*' (Lather, 1991, p. 5). However, this researcher would argue that making such a choice to affirm one definition over another is not inconsistent with the view of the 'impartiality' of science, where judgements of cognitive value can be construed as the outcome of how useful a definition could be in terms of its explanatory and predictive power (Lacy, 2005). Consequently, the unifying nature of Smith and Lewis' (2011) work has arguably resulted in a greater clarity in what constitutes a paradox and together with its potential explanatory and predictive value, means that for this thesis the researcher chooses Smith and Lewis's interpretation of paradox i.e., '*contradictory yet interrelated elements that exist simultaneously and persist over time*' (ibid, p. 383) as the principal definition of paradox that will be examined throughout this research.

In the next section, the two literature reviews are conflated into an aggregate synthesis using Smith and Lewis' typology of organising, performing, belonging, and learning tensions together with the four aggregated contextual strategic challenges identified via the servitization literature to form the theoretical building blocks of reliable research framework in which to explore the research phenomenon and answer the stated research question.

2.4 Literature Review Part Three – Aggregate Synthesis: The theoretical building blocks

A general observation from the literature review is that servitization is commonly presented as a zeitgeist for all competitive manufacturing firms (Huikkola, Kohtamäki and Rabetino, 2016), even in the face of research evidence challenging this perspective. Scholars such as Oliva and Kallenberg (2003), Baines and Lightfoot (2013) and Brax (2005) pinpoint, for example, issues over firms' profit margins: with others suggesting that servitized manufacturing firms achieve lower profit margins than

pure manufacturing firms (Gebauer, Fleisch and Friedli, 2005; Neely, 2008). Indeed, Fang, Palmatier and Steenkamp (2008) go so far as to say that to reap potentially significant financial returns, manufacturers require a critical mass of servitized business activity in the region of 20-30% of overall turnover for such a strategy *'to begin to influence firm value positively and at a rapidly increasing rate.'* (ibid, p. 9)

Scholars also highlight that the servitization transition is challenging for manufacturers (Baines, Lightfoot and Smart, 2013; Kowalkowski et al., 2015). Alghisi and Sacconi (2015) identified no less than seventeen organisational challenges, spanning a broad portfolio from a firm's readiness to its sourcing decisions. Similarly, Martinez et al. (2010) identified issues ranging from a lack of organisational culture, insufficient capabilities and internal processes, through to deficiencies in organisational design. Baines et al. (2009) noted challenges by functional areas, such as human resources, quality control, product/service range, performance measurement and supplier and customer relations, with others conceptualising challenges from a customer-centric perspective, commenting on the need for innovative and agile solutions to address clients' demands (Raddats, Burton and Ashman, 2015).

However, what appears to be missing from the debate, is both an appreciation that such challenges are not all of the same order or insights from individuals who are central to the process on how they perceive and cognitively frame these challenges (Lenka et al., 2018a). This idea of homogeneity fails to recognise the variety and complexity of the change's firms need to undergo, changes in activities, and processes, both internally and externally, across organisational, divisional, as well as supply and demand chains. Such changes inevitably reconfigures organisational dynamics, embedding within the organisational boundaries multiplicity of inconsistent goals, norms, and values, creating contradictory tensions for management to address (Besharov and Smith, 2014).

The object of this research therefore lies in developing a better understanding of the challenges and instantiated organisational tensions within an established servitized manufacturer. To achieve this the outcome of the literature review will present a schema to organise current knowledge of

challenges and tensions providing an integrating framework for developing a research design to explore this phenomenon further. It does this by distilling from the literature ten paradoxical tensions, which are catalogued according to four strategic challenges associated with distinct, yet interrelated, dimensions of organisation design as follows (i) business models; (ii) structure; (iii) performance and (iv) culture (see Table 2-4 below).

Many scholars agree that organisations are inherently paradoxical entities (Smith and Tushman, 2005; Andriopoulos and Lewis, 2010; Jarzabkowski, Le and Van de Ven, 2013). The paradoxical nature of these tensions often emerge as leaders respond to foundational questions (Martini et al. 2013), such as 'what they are going to do', 'how they are going to do it' and 'who is going to do it', and in doing so construct boundaries that foster distinctions and dichotomies (Ford & Backoff, 1988).

For manufacturers shifting towards enhanced service provision through the adoption of a PSS business model (Baines and Lightfoot, 2013), finding the answers to these questions can contribute to rising complexity and ambiguity within their organisation, as unidirectional cognition tends to oversimplify management practice and demands (Lewis, 2000). Today, manufacturers frequently face both external and internal pressure to embed paradoxical and dichotomised demands within their organisation (Greenwood et al., 2011); challenges which require a new paradigm, capable of both identifying and managing the paradoxical tensions inherent in the delivery of complex service system offerings. Although initially paradoxical tensions may appear dysfunctional or even schismogenic in nature, they can, if navigated correctly, support creativity and innovation (Andriopoulos and Lewis, 2009; Eisenhardt, 2000).

Table 2-4 Strategic challenges, dualisms, polarities, and tensions in servitization transitions

Strategic challenges	Type of organizational tension created using Smith & Lewis (2011)	Field-level dualisms and polarities	Polar positions of 10 tensions	Exemplar research
Business Model	Learning "Efforts to adjust, renew, change and innovate foster tensions between building upon the present and destroying the past to create the future"	Asset centrality- service centrality	1. Explore vs exploit choices 2. Current value vs future value	Redding, 2014; Reim, Parinda and Orqvist, 2015; Isaksson, Larsson and Öhrwall, 2009; Oliva and Kallenberg, 2003; Araujo and Spring, 2006.
Structure	Organising "Tensions presented as the on-going contradictions of organization integration and differentiation"	Differentiation-integration	3. Monodexterity vs Ambidexterity 4. Dependence vs independence	Oliva and Kallenberg, 2003; Dimache and Roche, 2013; Baines et al, 2008; Gebauer, Fleisch and Friedli, 2005; Kucza and Gebauer, 2011
Performance	Performing "These tensions stem from the plurality of stakeholders, resulting in competing strategies and goals"	Transactional outputs-relational outcomes	5. Cost efficiency vs cost effectiveness 6. Basic bolt on services vs through-life support services 7. Goal singularity vs goal plurality 8. Skills vs capabilities	Huikkola, Kohtamaki and Rabetino (2016); Raddats, C., Burton, J., and Ashman, R 2015; Reinartz and Ulaga, 2008; Gebauer, Ren, Valtakoski and Reynoso, 2012; Baines, Lightfoot, Peppard, Johnson, Tiwari, Shehab and Swink, 2009; Gebauer, Fleisch and Friedli, 2005
Culture	Belonging "At the firm level, opposing yet coexisting roles, memberships and values highlight tensions of belonging"	Enculturation-alienation	9. Engineering Mindset vs Services Mindset 10. 9-5 manufacturing-24/7 service provider	Gebauer, Edvardsson, Gustafsson and Witell, 2010; Baines, Lightfoot, Benedettini, and Kay, 2009; Alghisi and Sacconi, 2015; Baines, Lightfoot, Smart and Fletcher, 2013; Raddats, Burton, and Ashman, 2015; Martinez, Bastl, Kingston, and Evans, 2010; Higgins, 1998.

Embracing a paradoxical perspective means accepting that competing demands are inevitable in organisations (Lewis, 2000; Clegg, da Cunha and Cunha, 2002). However, normalising and capitalising on these competing pressures demands sensitivity and bimodal forms of thinking and attitude. Accordingly, Smith and Lewis, (2011) proposed a systematic interpretation of organisational paradoxes in the guise of a conceptual framework, in which they argued that the intersections between different pairs of paradoxes could give rise to varying types of tensions (Jarzabkowski, Le and Van de Ven, 2013)

Such tensions are presented under a typology of paradoxes:

- Paradoxes of learning (knowledge - tensions created between the old and the new),
- paradoxes of organising (processes),
- paradoxes of belonging (identity/interpersonal relationships),
- and finally, the paradoxes of performing (the result of the plurality of goals from internal and external stakeholders).

Smith and Lewis' (2011) contention are that these tensions represent core organisational activities (knowledge, interpersonal relationships, processes, and goals), which occur not only within each category, but also at their intersections and across all organisational levels.

Paradox scholars assert that by accepting paradox logic organisations can move away from traditional unidirectional solutions that can stifle innovation, to one of bimodal learning addressing paradoxes head on, to transcend them and thus release their potential, arguing that only through transcendence of paradoxes (Pascale, 1990) can management unleash creative possibilities, enabling an organisation to transition from a stable state to one fostering change and adaption.

In the next section, completing the first principle of abductive reasoning (Dikova, Van Witteloostuijn and Parker, 2017), each of the servitization strategic challenges, presented as theoretical building blocks derived from the literature review of the two respective fields, together with Smith and Lewis's

(2011) typology, are now juxtapositioned to create a general innovative conceptual framework for thinking about the challenges and autogenous tensions inherent in a servitization transition.

This categorisation of intra-organisational structural challenges and tensions are now explored in greater detail over the next few pages, specifically focusing on the business case model, structures, performance, and cultural challenges together with their embedded tensions.

2.5 LEARNING: Business model challenge: asset-service dualism

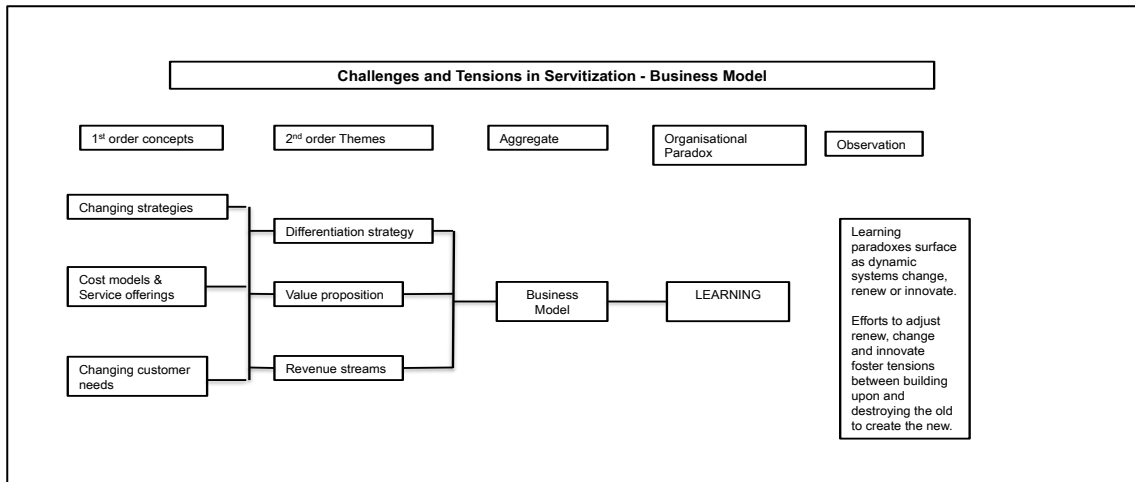


Figure 2-3. Business model challenges

The first aggregate theme to emerge from the literature review relates to the strategic challenge of establishing a new business model that embraces servitization, shown in Figure 2-3. The basic purpose of a business model is to conceptualise the creation of value for the customer, and then constructs an infrastructure to deliver that value (Chesbrough and Rosenbloom, 2002). As such a business model offers a heuristic logic that connects simultaneously the need for continued exploitation of a product-oriented market offering, and the future exploration of a service-oriented market offering (Gibson and Birkinshaw, 2004; He and Wong, 2004).

Scholar such as March (1991), Visnjic, Wiengarten and Neely (2016) and Raja, Frandsen and Mouritsen (2017) note however that exploit-explore activities are often in dualistic competition, requiring them on one hand to develop competencies within which they are able to exploit existing capabilities and on other explore areas in which the adoption of different capabilities are needed. The challenge confronting firms, therefore, is how to develop capabilities that will enable them to successfully engage in both types of activities simultaneously and synergistically.

In a traditional asset-based business model, the customer tends to purchase a product, becoming responsible for its performance, maintenance and eventually its disposal. Servitization however is a services-led strategy that sees manufacturers competing through a portfolio of product and service

offerings. For manufacturers, such a concept is about more than just adding services to its product offerings (Oliva and Kallenberg, 2003; Davies, 2004; Tukker, 2004; Gebauer et al., 2010a; Baines and Lightfoot, 2013) rather, it is about presenting the manufacturer as a service provider. Thus, servitization is a move from a 'transactional-based' business model to one of a 'value-in use' business model (Baines and Lightfoot, 2013; Ng et al., 2012).

Whilst neither production systems nor PSS systems operate in isolation, the roles within the systems differ and consequently potentially conflicting objectives between products and services can arise. As such manufacturers need to assess the complementarity of product innovation and service innovation, deciding early on whether to deploy them together or independently, their impact over the short-term versus the long-term, and which business model to adopt (Visnjic, Wiengarten and Neely, 2016).

Neely (2008) pinpoints the nature of these challenges, as the development of an organisation's capabilities and processes through enhancing value by shifting from selling products to selling products and services. Chesbrough (2011) supports this opinion, seeing the move towards services as an innovation of the business model. An innovation, which, due to the complex nature of the servitized value proposition and the mix of competencies required to delivering it, would seem to indicate the need for business models that can host paradoxical strategies.

On reviewing the literature, it appears paradoxical strategies thrive within complex business models: exploration/exploitation, global/local, or adopting both social and financial strategies simultaneously. Consequently, business models need to be designed to attend to the tensions of paradoxical strategies that seek to address the needs of the present as well as the future, engaging tensions from inconsistencies or contradictions in the products/services, markets, and/or the processes, and competencies associated with each strategy (Smith and Tushman, 2005; Smith, Binns and Tushman, 2010).

This dualistic approach within a business model is not new. Peters and Waterman (1982), Teece, Pisano and Shuen, (1997) and Teece (2006) concluded that building and managing such strategies make for dynamic, sustainable organisations; however, hosting such paradoxes requires complex business

models capable of managing inherent tensions while simultaneously enabling contradictory agendas to blossom (Smith, Binns and Tushman, 2010). Embracing such complementary dynamics, one could argue has been what has driven the success for world leaders such as Toyota and Southwest Airlines.

Consequently, this review identifies that the traditional manufacturing business model is insufficient to deal with the complexity rooted in servitization. Instead there is a requirement for more innovative business models capable of building and sustaining organisational designs, whilst concurrently building commitment to a firm's exploratory activities and simultaneously supporting its current exploiting activities (Smith, Binns and Tushman, 2010).

In this literature review, 132 incidents containing explicit and implicit commentaries on the importance of such alignment were identified; supporting Redding's (2014) comment that *'the emergence of the 'manu-service' organization appears to be the next stage in the evolution of the manufacturing sector. It is the paradigm shift in the business model ...'* (ibid, p. 299).

In juxtaposing Smith and Lewis's (2011) typology of organisational tensions against the theme of business models, the predominant tension identified can be associated with innovation, which is categorised under the 'paradox of learning'. This tension centres what Lewis (2000) sees as organisational conflict over *'the comfort of the past and the uncertainty of the future'* (ibid, p. 766) which highlights the difficulty of reconciling competing logics arising from the paradoxical nature of developing future capabilities, while simultaneously having to assure stakeholders of success in the present.

Dougherty (1996) and Sheremata (2000), however, suggest that such innovation presents firms with multiple polarities and conflicts between new-old, determined-emergent, and freedom-responsibility; bestowing innovation in terms of a tug-of-war between centripetal and centrifugal forces that fuel discovery and synthesis respectively (Andriopoulos and Lewis, 2009).

Moreover, the literature suggests that dealing with a multiplicity of tensions can be problematic as adopting a binary solutions approach of 'either/or' thinking to address them can trigger reinforcing

cycles, described as either 'vicious or virtuous' by Lewis (2000) or 'schismogenic' by Cameron (1986). These cycles are brought about by the one-sided focus on either exploitation or exploration activities, and that they perpetuate until becoming extreme, often resulting in dysfunctional and destructive activities (March, 1991; Tushman and Reilly, 1996).

The paradox of learning is, therefore, more than the tension experienced in moving between the old and new, which may occur in any change process (Seo, Putnam and Bartunek, 2004), it also involves an constitutive tension between modes of knowing and knowledge acquisition (Jarzabkowski, Le and Van de Ven, 2013) and can be found in organisations assuming exploit-explore strategies. Such innovative strategies require organisations to simultaneously '*capitalise on and cannibalise their existing product base in order to stay at the forefront of innovation*' (ibid, p. 248). Consequently, the innovation paradox relates to a firm's core capabilities (Teece, 2006) both now and in the future, and whether they are sufficient to meet the needs of their new business model.

Although existing capabilities can enable a firm to form new strategies, the same capabilities can create rigidities and inhibit innovation, and can in the worst cases turn core competencies into '*core rigidities*' (Leonard-Barton, 1993, p.118). Consequently, manufacturers moving from product-centric to product-services needs to carefully manage the learning paradox to ensure they take advantage of their organisations core capabilities, without being troubled by their incongruous flip side.

2.6 ORGANISING: structure challenge - differentiation-integration dualism

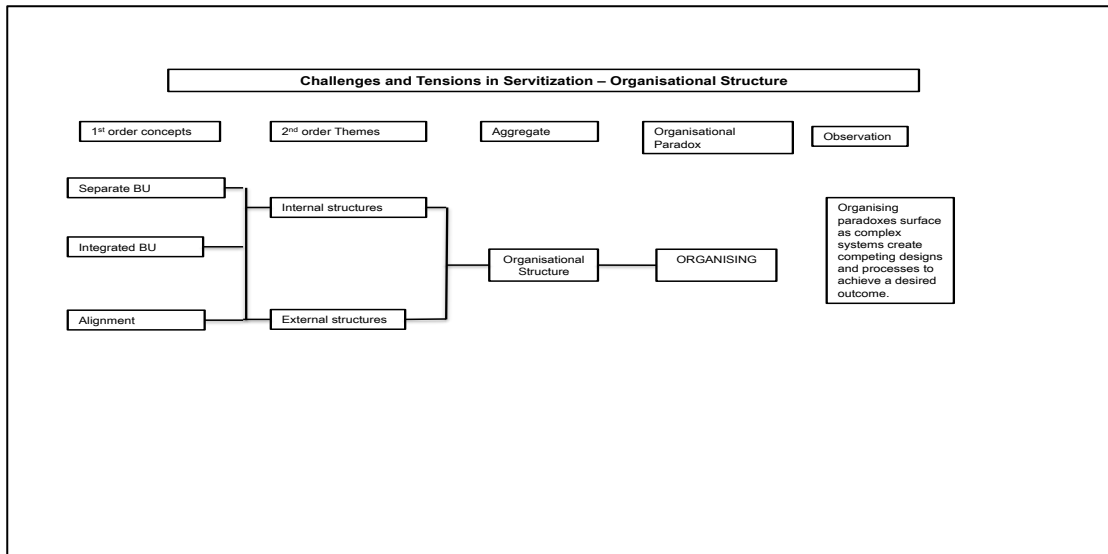


Figure 2-4. Organisational structure challenges

The second theme to emerge from the literature review concerns the organisation structural configurations necessary to support a servitization transition-Figure 2-4 refers. The review found 134 comments relating to challenges of organisational structure, which have been sub-divided into two structural categories: external and internal challenges. Dealing first with the external structures, much of the literature acknowledges that to ensure long-term survival, firms need to innovate yet continuously build upon established routines and capabilities.

Addressing such polar and dualistic goals in servitization brings into focus the antagonistic tensions of stability and change inherent in the exploit-explore scenario as exploration and exploitation differ in time horizons and scope. Consequently, a central issue throughout much of the servitization literature is whether to separate or integrate exploit-explore activities (Blindenbach-Driessen and Van Den Ende, 2014). Scholars have long commented that managing such a dualism requires firms to realign their structures (e.g., Schumpeter, 1934; Tushman & O'Reilly ,1996), in order to execute innovation (Duncan, 1976).

In the first use of the term 'organisational ambidexterity' Duncan (1976) argued that generating long-term success necessitated firms to reconfigure their structures; to move to dual autonomous structures,

where organic structures were employed to explore, followed by mechanistic structures to exploit (i.e., structural ambidexterity). In this conceptualisation, ambidexterity necessitates not only the physical separation of subunits for exploration and exploitation, but also the separate alignment of people, processes, and cultures within the units (O'Reilly and Tushman, 2008). However, the literature is also cognisant that creating two separate organisational entities, with different competencies, incentives, and cultures increases the chances for conflict and tensions within an organisation (March, 1991; Andriopoulos and Lewis, 2010).

In response to this observation Gibson and Birkinshaw (2004) advanced the idea that organisations could manage the antagonistic tensions of exploit-explore through the empowerment of employees (Fredberg, 2014; Smith and Lewis, 2011) by *'building a set of processes or systems that enable and encourage individuals to make their own judgements about how to divide their time between conflicting demands of alignment and adaptability'* (Gibson and Birkinshaw, 2004, p. 201). However, whilst such firms are seen as valuable for exploiting current competencies and exploring new domains with equal dexterity (Lubatkin, 2006), this literature review found examples of contextual ambidexterity rare, with perhaps the most celebrated exemplar reported in Adler, Goldoftas and Levine (1999) review of how the Toyota production system operates.

Overall, the extant literature is almost unanimous in supporting the case for monodextrous business units contesting that the role of factories is to exploit economies of scale by centralising manufacturing activities that exploit resource availability (Baines, Lightfoot and Smart, 2012). Whilst much of the literature acknowledges the need for new organisational structures, it nevertheless suggests that the goods-dominant logic embedded in manufacturing makes it difficult for firms to address exploration and exploitation simultaneously.

As firms adjust their organisational design to deliver a servitization strategy, there is a need also to change the organisation's internal structure to support them. The literature identifies several key internal structural challenges to be overcome, ranging from the redesign of business unit responsibilities and processes, the management of intra- and inter-firm collaboration through to

supporting decentralised decision-making; characteristics significantly different to those of traditional production systems (Neu and Brown, 2005; Baines and Lightfoot 2013) yet proffered as a critical factor in the delivery of a successful servitization outcome (Bustinza et al., 2015).

The organisation and delivery of such structural change inevitably give rises to organisational tensions as new structures often clash with traditional practices (Panayiotou, Putnam and Kassinis, 2019). Organising involves conflictions (Smith and Tushman, 2005) with structural matters in paradox literature typically referred to as the 'organising paradox', in which tensions arise due to inherent contradictions between different parts of the organisation, often latent in nature, becoming salient as organisational changes trigger responses (Lewis, 2000). The discussion concerning the antagonistic tensions brought about by external and internal structural change can be illustrated by association with two types of problems: convergent and divergent (Cameron, 2017).

In convergent problems, the answers tend to converge to a single solution, such as the separation of business units to address the exploit-explore tensions. Divergent problems, on the other hand, defy linear solutions, and the more one seeks to impose single solutions, the more contradictory and opposite the outcome can become. As Cameron explains convergent problems can be solved, divergent or paradoxical problems cannot (ibid, 2017). Managing divergent or paradoxical problems is about managing innovation and raising the organisation's understanding of issues that convergent decision-making cannot achieve.

Divergent problems can become particularly salient during periods of organisational change (Abdallah, Denis and Langlely, 2011; Lüscher and Lewis, 2008; Smith and Lewis, 2011) because change begets tensions between the old (isomorphic) and the new (heterogeneity) structures, often emerging as actors struggle with simultaneous needs for stability and change (Lewis, 2000; Lüscher and Lewis, 2008). In the act of organising, activities can be seen to be paradoxical and oppositional in tendency, a point succinctly captured by Jarzabkowski, Le and Van de Ven (2013) in their comment that the on-going process of organising is innately paradoxical.

What can be extrapolated from the paradox literature and applied to the servitization challenges relating to structural change is that the paradox of organising can if not managed properly lead to predictable pathologies. All change brings with it inherent organisational tensions; however, these inherent tensions are better suited not as problems to be solved through convergent thinking, but rather by exploiting their coexistence (Lewis and Smith, 2014). In addressing structural changes to deliver servitization goals, management need to recognise that organising tensions frequently oscillate between different poles of paradoxical logic, and if they do not wish to trigger a vicious reinforcing cycle, (Lewis, 2000) they must become adept at identifying and managing such persistent, conflicting and often-complementary tension they will face in changing organisational structures (Chung and Beamish, 2010).

2.7 PERFORMING challenges: transactional-relational outcomes dualism

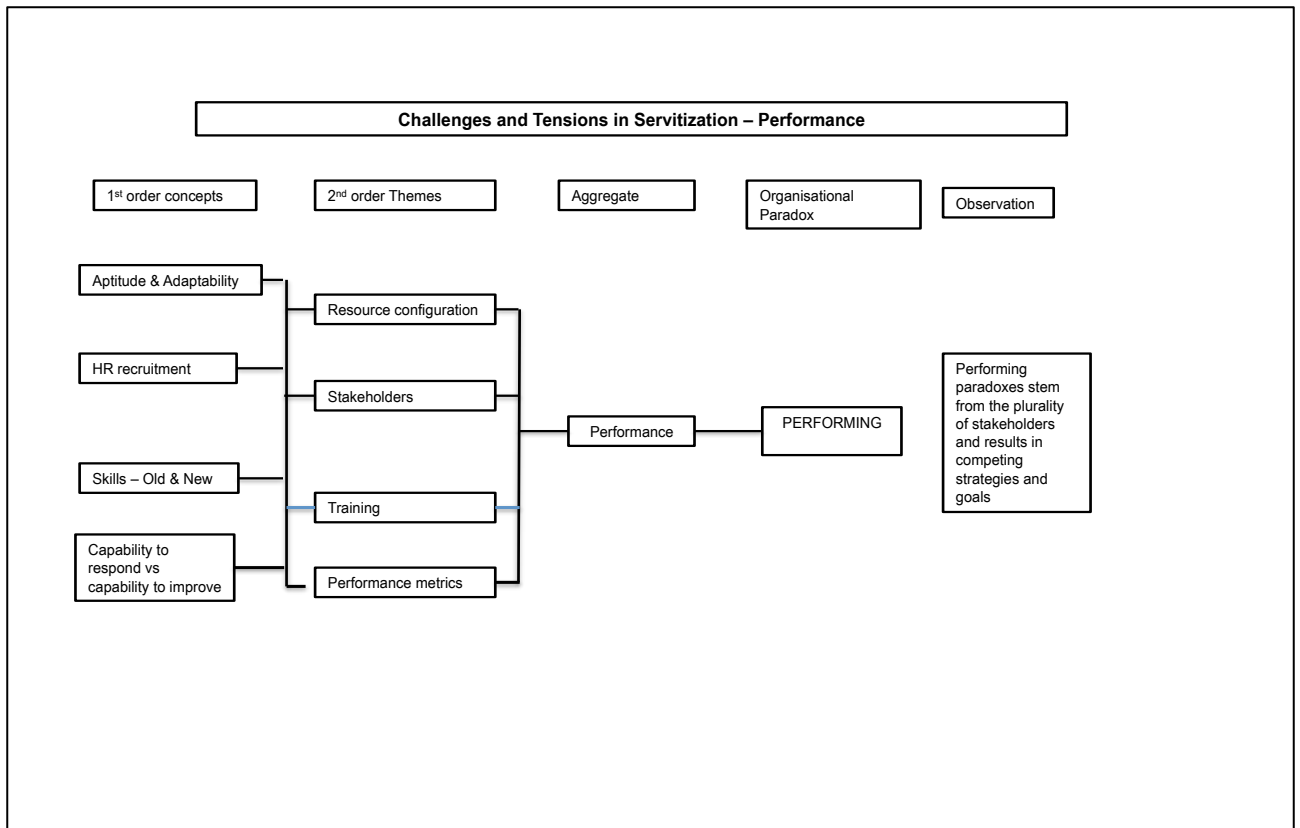


Figure 2-5. Performance Challenge

This section discusses how organisational performance challenges, shown at Figure 2-5, can generate tensions between competing demands of stakeholders as well spurring tensions around capabilities and resources, and measuring performance against outcomes (Smith and Lewis, 2011).

2.7.1 Resource Implications

In terms of tensions concerning resource configurations, the servitization literature is replete with comments asserting that firms need to develop capabilities that are distinct to those pursuing the traditional manufacturing model of business (Cook, Bhamra and Lemon, 2006). Servitization is a paradigm shift in manufacturing (Baines and Lightfoot, 2013) requiring firms to realign resources to meet the challenges of its delivery. Such realignment is often the catalyst for firms to develop dynamic capabilities for the delivery of a servitization strategy (Huikkola, Kohtamäki and Rabetino, 2016) arguing that improvements in capabilities within a firm's supply base have relaxed the need

for manufacturers to own all the production and service and as such have inspired firms to divest and relinquish many of their traditional activities and skills, often outsourcing all non-core competences to external suppliers or network partners (Sakao, Sandström and Matzen, 2009). However, such a solution is not without risks (Cook, Bhamra and Lemon, 2006) for if firms out-source too many activities, then core knowledge could be lost to third parties, and consequently impact a firm's ability in the future to develop efficient solutions tailored to future customer needs.

Servitization literature emphasises two cognitive-cultural frames of reference in relation to *'moving from discerning resources primarily as either operand or operant'* (Vargo and Lusch 2008, p. 258). Service-dominant logic opinions resources as all the assets of the company that can be regarded as either strengths or weaknesses, be they tangible or intangible (Vargo and Lusch, 2004, 2008; Smith, Maull and Ng, 2014; Turunen and Finne, 2014) where value is defined by and co-created with the customer rather than embedded in the product and as such presents *'service as the fundamental basis for exchange; with goods merely a distribution mechanism for service'* (Benedettini, Neely and Swink, 2015, p. 950). Operant resources and their effective allocation and management are therefore central to firms establishing a competitive advantage (Vargo and Lusch, 2004).

2.7.2 Capabilities

The evolution of manufacturing has seen significant changes in the expected skill-sets of workers (Baines and Lightfoot, 2013). The literature review highlighted the need for servitization firms to hold innovative HR practices to ensure employees are organised, recruited, trained and retained with what Lee and Lee (2007) refer to as *'T-shaped'* skills, those encompassing a high depth and breadth of product knowledge together with a customer focussed mindset.

People with T-shaped skills are extremely valuable to organisations in that they have the capacity to create new knowledge through the integration of diverse knowledge assets (Leonard-Barton, 1995). Human resource strategies, therefore, need to be adaptable to recognising the challenge of accumulating and retaining such operant resources, *"[...] credibility of expertise is fundamental"* (Brax, 2005, p. 151) for as Baines et al. (2009) observed, *"delivering services is not easy – there is a lot of*

complexity, especially when you're talking about services that interface with complex difficult products and it needs people who are customer focussed, running processes that work smoothly" (p.510).

Servitization will see those firm's delivering an advanced PSS offering extending its operations with a customer over a greater timeframe than if they were delivering a basic service offering or just operating as a product-centric only manufacturer (Baines et al., 2013). Contracts of 10, 15 and 30 years are not untypical for PSS offerings and consequently a greater percentage of their business will interface with such customers. Such interaction, the literature advises, often requires the learning of new behaviours and skills, operant resources which then become critical components of a firm's capabilities. Capabilities that Raddats, Burton and Ashman (2015) acknowledge can influence a firm's success as well as a key component in differentiating products and enhancing customer satisfaction (Brax, 2005; Oliva, Gebauer and Brann, 2012).

The literature acknowledges that in terms of skills there is a difference between those engage in production activities only and those with a more product-service requirement. Levitt (1983) for example talked about those personnel involved in services tending to display humanistic attributes in contrast to those in production where technical and analytical proficiency were highly regarded. Whilst this may still be true in many organisations, even those delivering product-service offerings, much of the literature posits the view that to deliver an advanced service offering requires employees who have both high levels of product knowledge and an ability to manage and develop on-going customer relationships (Raddats, Burton and Ashman, 2015). Baines and Lightfoot (2013) and Baines et al., (2013b) identify this group of people as operating primarily from a company's front office undertaking activities from marketing through to technical staff supporting services to the customer. While this mix of staff may seem diverse in nature all necessitate technical competency with customer-focussed mindset.

Achieving such a mix of skills is a significant challenge and can put pressure on manufacturers to either invest in training or out-source these skills to a third-party supplier, both options can be problematic; in-house training, for example, the advantages in efficiency obtained by developing the capability in-

house may be '*at the expense of economies of specialisation*' (Davies, 2004, p. 730), whilst outsourcing can lead to a loss of operant skills or the development of asymmetrical power dynamics between provider and manufacturer. However, despite such risks Davies (ibid, 2004) antithetically notes, successful providers of integrated product-service solutions are becoming less dependent on in-house capabilities.

2.7.3 Stakeholders.

As a firm's offerings move from basic to a more advanced integration the literature talks about greater numbers of stakeholders becoming involved as such a progression tends to embrace greater levels of collaboration and co-creation via stakeholder engagements and relationships (Baines and Lightfoot, 2013; Raddats, Burton and Ashman, 2015). Manufacturers who can utilise their existing customer base as operant resources to co-create value can provide exclusive and difficult-to-imitate offerings (Oliva and Kallenberg, 2003; Vargo and Lusch, 2004; Fang, Palmatier and Steenkamp, 2008; Gebauer, Gustafsson and Witell, 2011).

However, utilising stakeholders in such an arrangement is not without challenges; for example, if two firms collaborate to co-produce an advance service offering, there could exist between them an asymmetry in organisational abilities which could result in one firm exerting power and control over another organisation and its resources. Therefore, effective cooperation requires a serious commitment by the partners not to engage in power play conflicts (Zolkiewski, Burton and Stratoudaki, 2008). However, designing cooperative agreements can be problematic, as it requires new structures, processes, and organisational practices to emerge from routine interactions and transactions between partners. Moreover, such cooperation brings not only internal risks to firms, as seen through loss of core competencies, but also external risks (Benedettini, Neely and Swink, 2015; Nenonen, Ahvenniemi and Martinsuo, 2014) in the form of regulatory, legal, economic, technological issues and associated environmental challenges.

2.7.4 Performance and Performance matrices

In terms of measuring organisational performance, traditional manufactures tend to focus on cost, quality, and delivery performance (Baines and Lightfoot, 2013). However, in delivering a PSS offering manufacturers tend to focus on the products performance, availability, and reliability (Baines and Lightfoot, 2014) together with new metrics focused on outcomes aligned to specific customer needs. In servitization, therefore, a greater emphasis is needed on customer facing metrics emphasising outcomes from a product's use, rather than its delivery and sale.

Consequently, servitization can present manufacturers with the need to manage competing performance measures: maintaining their traditional measurements for design, build and delivery operations with a set of internal measures best suited to their products and processes, whilst at the same time developing a new set of performance measures more aligned to reporting against agreed customers objectives and necessary to demonstrate value. Thus, servitization suggests that firms need to manage the concomitant need for both forms of assessment, bringing organising tensions in the management of the dualistic processes.

Performance management and performance measurement literature are well established within manufacturing literature (Maskell, 1989; Kaplan and Norton, 1993, 1996; Neely, et al., 1996; Beamon, 1999; Meyer, 2002; Slack, et al., 2007) yet in the service environment there appears to be a paucity of research on this matter (Neely, 2005). Consequently, one could argue there remains a bias in favour of traditional engineering performance measures. Although much of the literature heralded servitization as a panacea for manufacturers to address dwindling profits and market share, it was not until Neely's (2008) paper that the phenomenon could be said to have been truly analysed in detail.

What Neely's work highlighted was a 'Service Paradox' where larger firms with higher revenues (the very ones pursuing servitization and the most seeking higher profit) appeared in terms of performance to paradoxically generate lower profits than pure manufacturing firms. The study identified numerous reasons ranging from the fact that servitized firms in general have higher than average cost in labour, working capital, and net assets, than pure manufacturing firms, through to an organisation's reluctance

to embrace a service mindset, which can result in poor motivation and poor performance from employees (Visnjic, Neely and Wiengarten, 2012; Visnjic Kastalli, Van Looy and Neely, 2013). Interestingly, Neely, Benedettini and Visnjic (2011) updated the original findings, and in comparing the results from 2011 to 2008 perhaps the most surprising finding was rather than an increase in revenues through servitization, for many firms revenue remained relative stability.

From a paradox perspective the challenges relating to performance can be attributed to organisational tensions under the thematic heading of Performing. In 'performing' the duality observed is one of balancing the opposing poles of efficiency and slack. Performing tensions are frequently referred to as the differing and often conflicting demands of both endogenous and exogenous stakeholders' views of what constitutes organisational performance and success, together with how it is measured (Donaldson & Preston, 1995; Smith and Lewis, 2011).

Often, performing paradoxes emerge between short-term (often transactional) and long-term (often relational) activities, from the pressure to increase performance through the antagonistic demands of exploiting and exploration. When manufacturers undertake the transformation to a servitized firm middle and senior managers' roles often change, morph and multiply in response to conflicting demands during major transformational change. These conflicting demands often become salient at the micro level as individuals struggle to respond to ambiguous and conflicting demands of stakeholders, resource allocation and training needs (Smets et al., 2015). Such conflicting demands can often lead to contradictory interpretations and actions by management which can result in divergence amongst various functions within the organisation (Smith et al., 2012).

2.8 BELONGING Challenge: enculturation-alienation dualism

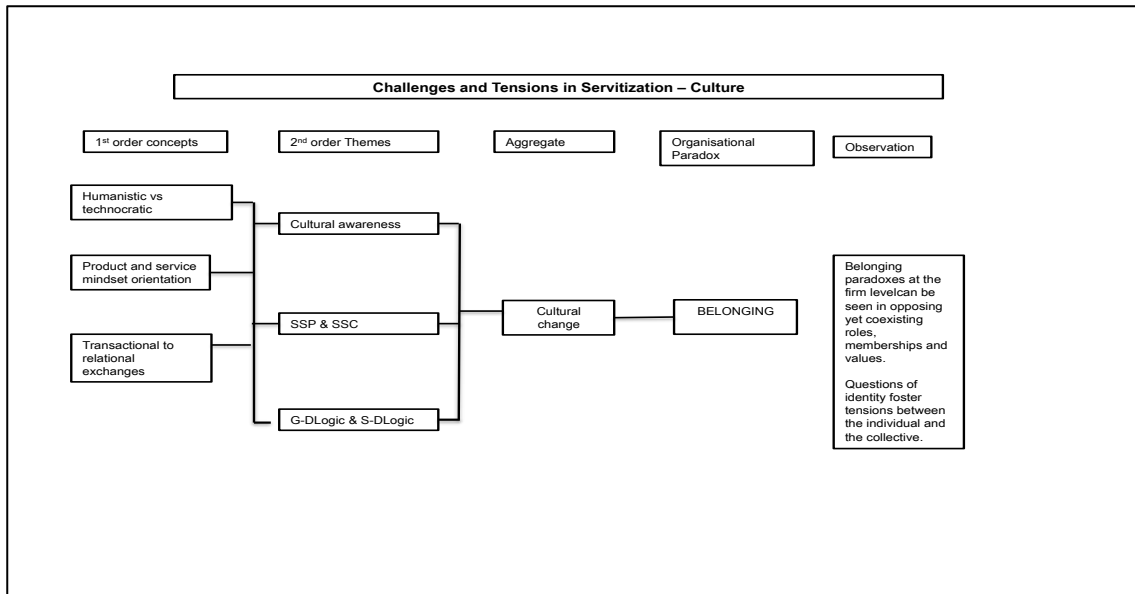


Figure 2-6. Culture Challenge

The final strategic challenge to be discussed concerns organisational culture, Figure 2-6 refers. Baines and Lightfoot (2013) note servitization is a paradigm shift where the divergent logics of production and service converge. However, such a confluence can be problematic as a firm's extant culture may be incongruous and even an obstacle to the implementation of servitization goals (Martinez et al., 2010). Lewis (2000) and Luscher and Lewis (2008) note that when organisations undergo change, members often experience tensions between the values and norms of belonging to their immediate referent group, while also belonging to the wider organisation. Throughout the literature many scholars acknowledge corporate culture as critical to the effective delivery of an organisations service offering (Baines and Shi, 2015; Baines et al., 2009; Gebauer, Fleisch and Friedli, 2005; Kohtamäki et al., 2013; Ulaga and Reinartz, 2011).

The literature identified that for firms delivering a multiplicity of offerings the impact of cultural challenges may vary according to the overall complexity involved in such constructs; however, intermediate and advanced service offerings (beyond basic) are generally associated with the need for a service-orientated culture (Gebauer et al., 2010). Such a transition (Oliva and Kallenberg, 2003; Jacob and Ulaga, 2008; Vargo and Lusch, 2008) requires above everything else a change in the

mindsets of employees. Baines and Lightfoot (2013) visualised servitization as the conflation of two dominant paradigms: goods-dominant logic (engineering mindset) and service-dominant logic (sales mindset).

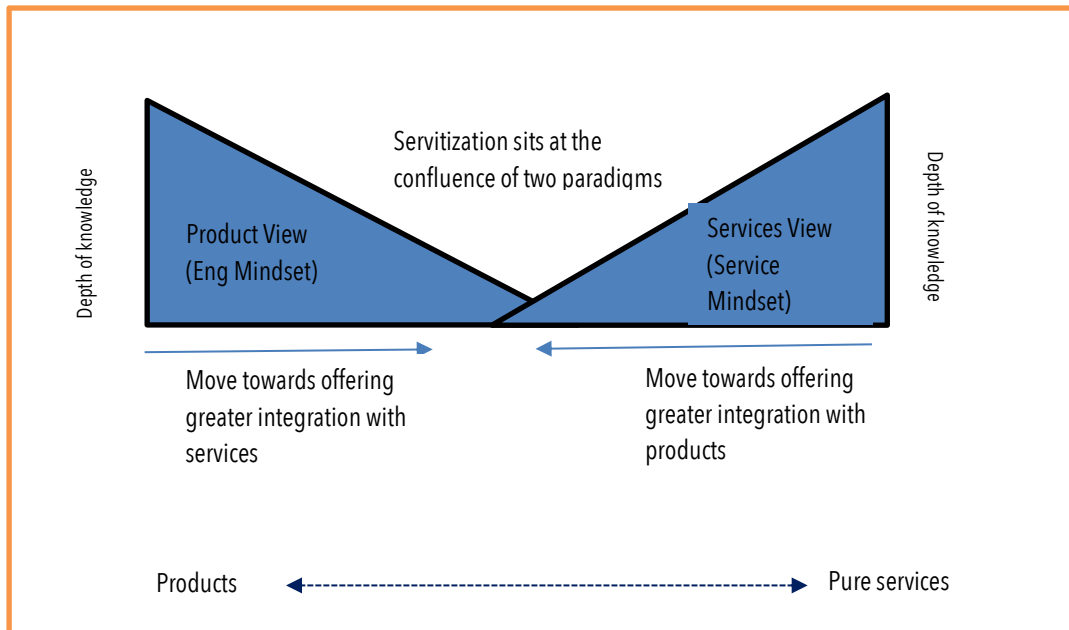


Figure 2-7. Confluence of worldviews (from Baines and Lightfoot, 2013, p. 59)

However, delivering a change of mindset is problematic. Management traditionally in manufacturing have not been easily motivated to invest resources in extending the service operations of a business (Gebauer and Fleisch, 2007) and as a result has need managers to overcome some of the typical and, in some respects, counterproductive behavioural processes of manufacturing companies. Such clashing worldviews is visualised in Figure 2-7, where engineering personnel tend to sit to the left of the continuum as their traditional expertise lies with design and production not services; whilst conversely, personnel with a services background tend to sit at the other end of the continuum.

From a paradox perspective and for firms undergoing a servitization transition the existence of such divergent views can be problematic. Andriopoulos et al. (2017), for example, identified how personnel delivering a service offering tend to focus on delivering accomplishments and have a higher threshold for risk (i.e. a promotion focus), whereas those engaged in product design and development are more

focussed on their responsibilities for quality and safety, and hence tend to have a more risk averse culture (Florack and Hartmann, 2007; Higgins, 1998).

Maintaining such an uneasy symbiotic relation between these diverse cultural logics is difficult, but essential if firms are to build the necessary long-standing relational focus with customers that is so critical to a servitization business model. The tensions surrounding the symbiotic relationship can be portrayed as one of conflict between a dominant-culture (Product centric) and a counterculture (Services). However, the successful exploitation of this duality can help diffuse resistance to change by balancing, for example the poles of efficiency (manufacturing values of good dominant logic) and the pole of flexibility (service-oriented values of a service-dominant logic), rather than by trying to supplant one value set for the other (Bowen, Siehl and Schneider, 1989).

Some scholars have tried to alley the need for cultural change by suggesting that companies moving from transactional to relationship-based services should set up an independent business unit for services, thus mitigating the necessity for cultural change (Oliva and Kallenberg, 2003). However, Neu and Brown (2005) counter this view; suggesting an integrated business unit is more beneficial to support complex customer needs. Whatever the structural solution imposed, the challenge of cultural dissonance around PSS strategies still exists, even within successful servitized firms as evidenced by Johnstone, Dainty and Wilkinson (2009) who found that even within a firm considered an exemplar in servitization transition, there still resided a dominant embedded engineering culture of '*product centrality*' (ibid, p.532). Clearly, attaining the right behaviour from staff to achieve a 'services culture' (Baines, Lightfoot, Smart and Fletcher, 2013) or a culture of customer service centrality (Raddats, Burton and Ashman, 2015) still presents a significant challenge to a firm's leadership.

The paradoxical challenge embracing a culture shift can be seen as one of belonging and enculturation; and understood from the competing poles of a 'product value framework' (supporting a goods-dominant logic) and 'service value framework' (supporting service-dominant logic): a duality presenting manufacturers with a multiple logic that may not be mutually compatible. The paradoxes of belonging are often most prominent during organisational transformation and restructuring (Seo,

Putnam and Bartunek, 2004). In such contexts the paradoxes of belonging become salient as tensions spurred on because of managing the heterogeneous relationships between individuals, groups, and the organisation. Consequently, the paradoxical tensions within belonging rotate around identity, norms and relationships and become salient as actors take on new roles or experience, changing environmental contexts when anxiety can often energise defensive and negative reinforcing decision cycles which if left unattended could become both an enabler and obstacle to organisational change (Lewis and Smith, 2014).

2.9 Summary of Literature review and the abductive theoretical design of a preliminary framework for field research

The previous sections presented a literature review on the conceptual features of servitization and paradox theory and identified '*ex ante*' theoretical building blocks for the construction of a preliminary conceptual research framework. Accordingly, the review was conducted in three parts:

Part One looked at servitization and reviewed the business rational for servitization, its key definitions, the research communities writing on the phenomenon; finally looking at the various descriptions used to define product-service offerings as well as a review of goods dominant and service dominant logic.

Part Two explored the concept of paradoxes, looking at its antecedents including the role of formal logic and the eastern philosophical influences of Taoism, Confucianism and Buddhism. It then explored the role of existentialism, dialectics, and paradox theory. Within paradox theory the review explored the lack of conceptual clarity (Smith and Lewis, 2011) so presented a review of oppositional forces frequently found in the literature such as tensions, contradictions, dualities, and dilemmas before presenting Smith and Lewis's (2011) definition of paradox as the selected definition for this research.

Part Three presented a synthesis of the literature review findings as a future conceptual framework for the development of a field research study model. In doing so the researcher presented an aggregate assessment of the literature's perspective of servitization challenges by distilling ten dualistic tensions catalogued under four strategic challenges associated with distinct, yet interrelated, dimensions of organisation design: business models; structure; performance and culture. These were then conflated with Smith and Lewis' (2011) typology of organisational tensions to present a preliminary, comprehensive, and holistic framework capturing both the challenges and inherent tensions the literature argues organisations face when undertaking a servitization strategy.

The literature review chapter developed the concepts needed to construct the research question. However, such a conceptualisation remained tentative and needed to be empirically investigated. Therefore, Chapter 3 discusses the methodology used to address the study's research question.

2.9.1 Limitations

The developed conceptual research framework however does not seek to present a finite topology of paradoxical tensions experienced during servitization. Instead, it challenges the current literature by emphasising the value of moving away from the traditional servitization research approach of presenting challenges as a linear progression of activities to be addressed. Additionally, the framework highlights that the challenges facing organisations in the liminal state between being a 'product only provider' to one of 'product-service provider' often have embedded within them multiple dualistic tensions which can impede servitization; however, the value of utilising paradox theory to research such tensions has been largely untapped by servitization scholars.

The literature review highlighted that servitization studies could benefit from research on challenges at the micro level looking at how their outcomes are influenced by individual perceptions, behaviours, and interactions among individuals. Thus, there is a need for the exploration of challenges as understood at a micro level through participant discourse allowing a researcher the opportunity to interpret and present a holistic understanding of organisational challenges arising during servitization and identify the plurality of often interrelated and interdependent tensions embedded within them, and how some '*characterised by their repetitive, loop-like nature and by their regular and recurring appearance over time*' (Aust, Brandl and Keegan, 2015) can become an impediment to effective delivery of a servitization strategy.

3 RESEARCH METHODOLOGICAL CONSIDERATIONS

The purpose behind this chapter is two-fold: first, it presents a discussion on the merits of the deployed method and instruments aimed at tackling the research question. It begins by examining the research philosophy, research logic and design, data collection and qualitative data analysis methods, enlightening the perspectives and approaches used in this study. Second, it will build on the methodological approach chosen to develop a suitable research design that is '*congruent with a researchers beliefs about the nature of reality*' (Mills, Bonner and Francis, 2006, p.26).

3.1 Research philosophy

A study's research philosophical position shape and orientate one towards a particular ontology and epistemology perspective and as such carries with it implications regarding the choice of research design (Chia, 2002). This is because the choice made by a researcher carries with it a variety of assumptions regarding what is understood to be the nature of knowledge and the methods through which that knowledge can be obtained (Morgan and Smircich, 1980). Consequently, to understand the research philosophy behind this thesis it is essential to not only state, but explain the assumptions underlying this work and their influence on the data collection, analysis, and interpretation behind the study's findings.

Academics such as Partington (2002); Robson (2002); Bryman (2004); Bryman and Bell (2011) and Symon and Cassell (2012), are in general agreement that prior to undertaking any form of study, researchers need to address certain philosophical choices. Easterby-Smith, Thorpe and Lowe (1991) offer three reasons why an understanding of philosophical perspectives is beneficial: First, it helps researchers clarify their research design, including what data to collect, from where, and how analysis of that data will be interpreted to help provide a better understanding of the research phenomena under investigation. Second, it leads to an understanding of the practical limitations of particular approaches and, third, it can help researchers design research strategies which are outside their normal experience. Accordingly, to demonstrate the legitimacy and reliability of this researcher's findings and

conclusions an elaboration of the philosophical perspective adopted throughout this study is warranted and discussed next.

3.1.1 Ontology

Ontology is concerned with the nature of social reality or social entities (Bryman, 2004; Bryman and Bell, 2011) thus to ask about the ontological existence of an entity is in fact to ascertain whether or not something is real (objective) or illusory (subjective) (Symon and Cassell, 2012). To date, such ontological arguments can be seen behind the a variety of ontological perspectives subsumed between these extremes (Blaikie, 2007; Cunliffe, 2011; Easterby-Smith, Thorpe and Lowe, 2002; Morgan and Smircich, 1980; Strauss and Corbin, 1990). When looking at the ontological philosophical perspectives of 'being' or 'becoming' the fundamental arguments supporting the two perspectives can be bracketed under the term's realist and relativist.

A realist or objective ontology holds that the world exists 'out there' it has an substantiate existence and is essentially external and independent of our perceptual or cognitive structures (Duberley, Johnson and Cassell, 2012). For a realist, knowledge is something to be assessed and measured using the methodological approach adopted in the natural sciences. As such, a researcher's role is to '*identify causal explanations and fundamental laws*' (Easterby-Smith, Thorpe and Lowe, 1991, p. 23).

Conversely, a relativist or subjective ontology holds that reality is historically, socially, and/or linguistically constructed rather than the result of immutable laws and stable universal principles (Chia, 2002). For a relativist, the overemphasis realists place on quantitative measurement is seen as flawed as measurement cannot capture the real meaning of social behaviour. Knowledge, relativists believe, comes from a researcher being able to unravel the underlying ideas, meanings and motivations, and that the world is a place of multiple individual realities shaped by context (Mills, Bonner and Francis, 2006).

3.1.2 Epistemology

Epistemology is the study of inquiry into the nature of social and physical worlds (Easterby-Smith, Thorpe and Jackson, 2012, p. 21). Thus, epistemological considerations are about what is, or indeed what should be, regarded as acceptable in terms of knowledge production. A central issue concerning epistemology surrounds whether the social world can be researched the same way as the natural world, using the same procedures and norms. Accordingly, two basic epistemologies have emerged, both questioning how knowledge is created: positivism and interpretivism (Bryman, 2004).

Positivism is a difficult term to define, to some it is a pejorative term describing crude and superficial data collection, for others it is a descriptive category, although there remains debate about what it comprises (Bryman, 2004). Positivism advocates methods from the natural sciences, its role in research is one of testing theories and developing laws (Bryman and Bell, 2011) based on *a priori* knowledge via the collection of data, which is then used to test the hypothetical predictions. As such positivism places primacy on directly observable phenomenon, where the results are presented as credible by the fact that any researcher observing the same event, or reviewing the same data, would see the same thing.

Moreover, any reference to the subjective in positivism is dismissed as irrelevant, reducing the human aspect of behaviour as necessary responses to '*empirically observed, measured, causal variables and antecedent conditions*' (Duberley, Johnson and Cassell, 2012, p.19). Positivism, then, is essentially, about looking for a constant relationship between actions, or in the language of the natural sciences, between two variables.

Interpretivism, and its variants such as constructivism, contrasts with positivism and subsumes the views of scholars critical of positivist orthodoxy. Such views are often influenced by different intellectual traditions, but all share a belief that research into the social world is critically different from that of the natural sciences; one requiring a different research strategy and challenges the perspective that a researcher is independent of the object of research (Lacey, 1999). Interpretivist's epistemologies hold that reality is given meaning and negotiated by human actors rather than objective and external factors,

with the observer regarded as part of the phenomenon of interest. Indeed, in a direct challenge to the orthodoxy of positivism, Savickas (1993) argues that society is entering a period beyond the tenants of positivism and objectivistic science; towards one of '*postmodern interpretivism*' (ibid, p. 208) where the comprehension and representationalism of modern rationality, is determined by people rather than objective and exogenous factors.

In terms of this study a pure form of realism and a positivist epistemology were deemed inappropriate. Ontologically/epistemologically, its inappropriateness stems from two observations. First, at the micro-level an organisational challenge is an idealised conceptual framework that provides meaning to individual's and is context specific – it is therefore not necessarily observable in an objective way (Smith and Tushman, 2005). Accordingly, such phenomenon can only be understood through an informant's discourse of a lived experience specific to a given '*historical social reality*' (Ponterotto, 2005, p. 129). Second, tensions are also regarded as cognitively and socially constructed by individuals, as well as being inherent within systems (Smith and Lewis, 2011) and not directly observable; therefore, a positivist epistemology was deemed inappropriate for their study.

Consequently, a relativist ontology and interpretivist epistemology were chosen for this study. A relativist's ontological stance was warranted as a key paradigmatic assumption behind it is that reality is a subjective and contextual experience (Denzin and Lincoln, 2005) and thus rejects the notion of an objective reality. This supports the study's premised epistemic relativism that knowledge is valid only relative to a specific context, society, culture or individual and, thus relies on an experience-based '*becoming*' ontology as opposed to an object-based '*being*' ontology.

Epistemologically, interpretivism aligns with this researcher's nascent belief that within the work place individuals continually construct and negotiate meanings to make sense of their lived experiences, construing meaning as '*intersubjective and processual; it is both personal and shared, shaped by one's experiences of self and self in-relation-to-others, and it is temporal and fluid*' (Grandy, 2018, p. 3).

Embracing epistemic relativism therefore allows the researcher to process his own understanding of reality and that of the dialogic of participants through a myriad of perspectives from diverse literatures, embracing varied purviews such as paradoxical thinking, servitization, philosophy, complexity, and OM studies, as outlined in Chapter 2. Then linking these perspectives with empirical observations based on a single case study, generate novel insights into the two primary domains of interest: servitization and paradox studies.

3.2 Logic of research enquiry

Research reasoning is often presented within social sciences as consisting of three options: deductive, inductive, or abductive (Bryman, 2004). Deductive reasoning takes place when a deduced hypothesis is subjected to empirical scrutiny, with the conclusion being true only when all the premises are true (Ketokivi and Mantere, 2010). Such an approach can be seen as *a priori* in nature.

Inductive reasoning on the other hand works in the opposite direction, where the researcher infers the implication of his findings by identifying a gap in the logical argument between the premises observed and the conclusion, with the conclusion being supported by the observations made (Ketokivi and Mantere, 2010), as such '*theory is the outcome of research*' (Bryman, 2004, p. 9) with the approach being *a posteriori* in nature.

Finally, abductive reasoning, often starts with what one might call a 'surprising finding' being identified (Charmaz, 2011), which a researcher then checks out in the 'real' world until satisfied that it is the most plausible explanation. Abductive reasoning requires a researcher to constantly move backwards and forwards between data and extant knowledge, making comparisons and observations searching for patterns and explanations to provide new insights. Abduction is thus an innovative process and a source of scientific creativity (Anderson, 1987: cited in Thornberg, 2012) enabling a researcher to challenge dogmatic beliefs and develop an open mind (Thornberg, 2012). Moreover, It encourages theories to be used as a source of inspiration and not merely to simply test hypothesis, as in deduction, but rather to shed light on to a phenomenon and its interpretation in order to detect patterns (Alvesson

and Sköldbberg, 2018). Table D-1 at Appendix D provides a summary of the key characteristics behind the deductive, inductive, and abductive approaches to reasoning.

Consequently, Abductive logic was chosen for this enquiry for two reasons. First, this research is an exploratory study in which the approach taken relied both on existing literature and on empirical observations, rather than on hypothesis as such it is a *'speculative process looking to fit unexpected or unusual findings into an interpretivist framework'* (Tavory and Timmermans, 2014b, p. 123). Second, the study is not founded upon a grand theory rather one that employs middle range thinking (Merton, 1968, pp.52–3), on the grounds that the likelihood of a grand theory accounting for social phenomena *"is wistful and incorrect quasi-scientific thinking of a highly questionable nature"* (Laughlin, 1995a, p.79).

The application of an abductive approach uses Dikova et al., (2017) ternary system:

- Stage One: Theory building. A review of the extant literature on servitization and paradox was conducted to identify theoretical building blocks for the construction of a preliminary conceptual framework for further analysis and to derive the thesis research question.
- Stage Two: Exploratory Qualitative Analysis. Involved collecting data and analysing it to explore the relationships between selected elements. An informed grounded theory approach was used to identify patterns

And finally,

- Stage Three: Theory development. Based on empirical findings from a case study a conceptual model was developed identifying the challenge derived from the empirical study and the consulted literature, this 2nd conceptual model was fine-tuned and compared against the preliminary model derived at Stage One to answer this thesis' research question.

3.3 Middle-range thinking

All research thinking is built on a range of assumptions about the nature of the social world and how one understands it. Grand theories tend to be abstract in nature and offer little guidance to researchers on how to collect empirical data and are thus built on a level of abstractness that makes it

difficult to test their assumptions empirically (Bryman, 2004; Bryman and Bell, 2011a; Easterby-Smith, Thorpe and Jackson, 2008). Consequently, grand theories do not generally guide management and business research (ibid, 2011), rather middle-range theories are used to bridge the gap between grand theory and empirical findings (Laughlin, 1995) and operate in a limited domain and represent attempts to "*understand and explain a limited aspect of social life*" (Bryman and Bell, 2011, p. 6). Therefore, middle range thinking is suited to and supports both the ontology and epistemology of this study, in that it validates observed affinities and generalities as well as the use of a priori theorising in the construction of theory building (Laughlin, 1995).

3.4 Research Design

The function of a research design is to limit the chaotic and ambiguous nature of field research (Edmondson and McManus, 2007). Consequently, any research design needs a robust framework that logically pairs methods with the state of theory development (i.e., nascent, mature, or intermediate) at the time of project commencement, to help ensure that the stated aims of the research at the outset are not lost or obscured in the 'fog of field research' (ibid, 2007).

The research design of this study is detailed in Table 3-1 and includes, though is not limited to, the five components of a research design which Yin (2014, p. 29-36) contests are important.

Consequently, this study applies a relativist, abductive, middle range approach to identify, capture, and interpret knowledge. The next methodical elements to be considered cover research question, type of data to be collected, the research design, theorising strategy, and unit of analysis. These are discussed below.

3.4.1 Research Question

The ways in which research questions are formulated from extant literature has been described by Sandberg and Alvesson (2011) in terms of confusion spotting, neglect spotting and application spotting. In a review of OM literature, Sandberg and Alvesson (ibid) contest that spotting something neglected in extant literature is today's primary mode of constructing research questions; focussing attention on what the authors describe as '*virgin territory – a white spot on the knowledge map*' (ibid,

2011, p. 30) invites an alert scholar to the possibility of fertile areas of research that have todate been neglected.

Table 3-1- Research design

Component	Explanation
Ontology	Relativist
Epistemology	Interpretivist
Mode of construction of research question	Neglect spotting
Proposition (if any)	Proposition not required due to exploratory nature of study. Purpose to identify competing demands an any inherent tensions within them.
Mode of research design	Single-case (holistic) design (Yin, 2014, p. 51)
Unit of analysis	Individual
Linking data to research	Cross model review of literature findings against empirical findings
Criteria for interpreting findings	See Section 3.4.7
Theorising strategy	Informed grounded theory and abductive analysis (Thornberg, 2012)

After reviewing the literature in Chapter Two, it is the contention of this researcher that most of the servitization literature relating to the intra-organisational structural challenges are overly simplistic in their interpretation, a view supported by scholars such as Rabetino et al (2018) and Raddats et al. (2019). Furthermore, servitization as a domain of research in general has lacked any significant input from paradox research. Considering this epistemic lacuna, a more holistic study of the emerging challenges and tensions facing an established PSS provider is warranted, one that explores the phenomenon through a paradox lens.

Accordingly, the research question chosen to address these failings is:

“How does the intra-organisational structural challenges of an established PSS organisation compare with those of firms undergoing initial servitization transition, and why could instantiated tensions within such challenges support their recursive nature?”

3.4.2 Mode of research design

Yin (2014, p. 9) postulates that there are five primary research methods: experiment, survey, archival analysis, history, and case study. The identification of which one to use depends upon three conditions, the type of research question presented, the extent of control an investigator has over actual behavioural events, and the degree of focus on contemporary events as opposed to historical ones.

This study's focus on "how" and "why" questions concerning contemporary events; consequently, the lack of researcher's control over behaviour therefore eliminated experiment and history as potential research methods. Archival analysis was also dismissed as perceptions are cognitively and socially constructed and as such identifying links between paradoxes and challenges suggests discursive processes through which actors seek to make sense of change, but that often foster anxiety and paralysis, therefore archival records would be of limited value, although newspaper cuttings and organisational documents were used in data triangulation to support the primary research method. Finally, the use of a survey was dismissed as cognitive conceptions of organisational challenges and tensions were deemed too nuanced to be effectively captured using a survey, and answer in a survey may not actually reflect how individual's feel.

Consequently, a single holistically designed case study was chosen as it was relevant to the conceptual frame and research question (Yin, 2014) allowing a comprehensive exploration of a contemporary phenomenon and its issues (Dubois and Araujo, 2007). 'Contemporary phenomenon' in this context relates to the challenges and organisational tensions embedded within such challenges facing an established servitization manufacturer as presented through the discourses of participants from its senior management, whom Gioia, Corley and Hamilton (2013) refer to as the '*essence of organisational experience*' (ibid, 2007, p.16). For a more detailed breakdown on case study design see Appendix C.

3.4.3 Proposition, purpose, and temporal nature of study

As this study is an explorative one, Yin (2014, p. 30) points out that it is legitimate for it not to have any propositions; although every 'exploration' should still elaborate on the topics to be examined within the study 'scope'. Accordingly, the primary objective of this research is to identify the challenges facing

an established customised solutions provider and the embedded tensions within, which may contribute to impeding servitization delivery.

Another consideration for a researcher contemplating a case study approach concerns whether to undertake longitudinal research or cross-sectional research. The temporal challenges of needing to conduct research, analyse data and produce a thesis within the limited project milestones of a PhD timetable necessitated a cross-sectional “snapshot” study approach be adopted.

3.4.4 Case study choice, level of analysis

In selecting a suitable case study to undertake this research an element of *'purposeful sampling'* where *'one can learn a great deal about issues of central importance to the purpose of the research'* (Patton, 2002, p. 169) was undertaken, resulting in the organisation deemed most suitable to investigate the phenomenon being a strategic business unit (SBU) of a UK based, global manufacturing company, one often epitomised in research as an exemplar of a successful servitization strategy and thus could be construed as an *'extreme'* or *'deviant case'* (ibid, p. 169; Johnstone, Dainty and Wilkinson, 2009).

The chosen case study organisation is one of three SBU that form a UK based multinational engineering business established in 1904. The SBU chosen provides integrated power and propulsion solutions and is considered one of the world's leading designers and producers of aero engines for large civil aircraft and business jets, as well as defence aero engines, and is an established player in the marine and nuclear sectors employing at the time of the research some 55,000 personnel world-wide.

3.4.5 Methodological fit

Edmondson and Mcmanus (2007) posit that theories in management research can be presented as travelling along a continuum from nascent to mature and posit that prior to undertaking any field research, particularly for a new or inexperienced researcher, a useful first step is to review the four key elements that make up a research design; namely, research question(s), prior work, research design and contribution to literature, in order to get a better understanding of how the reciprocal nature of the elements work together to aid the promotion of a methodological fit that aligns theory and methods in field research. In essence, the *'logical pairing of methods with the state of theory'* (ibid, p. 1177). Table

3-2 shows how a research design fit can be achieved in relation to mature, intermediate or nascent theory with one's field of study.

From the literature review undertaken for this research, one can arguably posit that the research findings and studies undertaken within the broad church of servitization demonstrate that this domain sits well within the criteria of a 'mature' field of research. However, paradox research, whilst it is clear that there has been a rapid rise in research looking at paradoxes; for examples see, (Gonin, Besharov and Smith, 2012; Knight and Paroutis, 2016; Miron-Spektor et al., 2017), it is nevertheless the opinion of this researcher that origins of paradox theory is still in its early, nascent stage (Fairhurst, 2019), albeit it is so close to intermediate that one could argue either way.

Consequently, as the aim of this research is to better conceptualise the intra-organisational structural challenges and identify the inherent tensions of delivering a servitization strategy of an already established player, the output from this research can be said to contribute to both literature domains. Adding to the broader and 'mature' domain of servitization whilst the outcome concerning paradoxical tensions will help '*connect data to existing theory*' of paradox, an approach Edmondson and McManus (2007, p. 1163) agree is appropriate for nascent theory.

3.4.6 Logic linking data to purpose

The data derived from the case study is linked to the purpose of the study using Eisenhardt's two-step process (Eisenhardt, 1989). First a within-case analysis is conducted encompassing the dialogic narratives of participants from the case study organisation to explore their perceptions of challenges they face, supplemented by a synthesis of the tensions identified within the challenges. The second step involves a comparative analysis of the case study findings against the literature review findings seeking to confirm, challenge or extend extant theory (Yin, 2014, p. 51).

Table 3-2. Four elements of a field research design (adapted from Edmondson & McManus, 2001)

State of prior theory and research	Nascent	Intermediate	Mature
Research Questions	Open ended inquiry about a phenomenon	Proposed Relationships between new and established constructs.	Focused questions and/or hypotheses relating existing constructs.
Type of Data Collected	Qualitative initially open-ended data that need to be interpreted for meaning	Hybrid (Both qualitative and quantitative).	Quantitative data: focused measures where extent or amount is meaningful.
Illustrative methods for collecting data	Interviews; observations; obtaining documents or other material from the field sites relevant to the phenomena of interest	Interviews; observations; surveys; obtaining documents or material from field sites relevant to the phenomena of interest.	Surveys; interviews or observations to be systematically coded and quantified; obtaining data from field sites that measure the extent or number of salient constructs.
Constructs and measures	Typically, new constructs; few formal measures	Typically, one or more new constructs and/or new measures.	Typically relying heavily on existing constructs and measures.
Goal of data analysis	Pattern identification	Preliminary or exploratory testing of new propositions and/or new constructs.	Formal hypothesis testing.
Data analysis methods	Thematic content analysis coding evidence of constructs.	Content analysis, exploratory statistics, and preliminary tests	Statistical inference, standard statistical analysis
Theoretical contribution	A suggestive theory, often an invitation for further work on the issue or set of issues opened up by the study.	A provisional theory, often one that integrates previously separate bodies of work.	A supported theory that may add specificity, new mechanisms, or new boundaries to existing theory.

3.4.7 Criteria for interpretation of findings

The selection of a criteria for interpretation of findings is central to demonstrating robustness of the research findings (ibid, p.36); moreover, for Interpretivism *'meeting tests of rigor is a requisite for establishing trust in the outcomes of the inquiry'* (Guba and Lincoln, 1981, p.103). Miles and Huberman (1994, p. 277) suggest this should be achieved on a qualitative researchers' own terms, rather than any attempt to convince positivists of the accuracy and unbiasedness of interpretivism studies, offering practical guidelines for the judgement of qualitative research (ibid, 1994, pp.278–280). Below, these guidelines are drawn upon with linked section references in thesis to establish the rigour of this study:

3.4.7.1 Issues of objectivity/confirmability

The issues around objectivity/confirmability concerns are framed as "*one of relative neutrality and reasonable freedom from unacknowledged research biases or explicitness about existing biases*" (Miles, Huberman and Saldana, 2014, p. 311), and emphasises the external replicability of the research. In seeking to address any concerns around these concepts, this research sought to address them in a variety of ways:

- First, the Research Framework explicitly described the general methods and procedures for how the research was carried out, Section 3.4 refers. The goal to offer a complete picture of the research to aid in the judgement of the quality of one's conclusions.
- Next, the researcher sought to allow readers to follow the researcher's sequence of '*how data were collected, processed, evaluated and displayed*' (ibid, 2014, p. 311) for the enabling conclusions to be drawn (see Sections 3.4.6 and 3.4.7).
- The conclusions (Chapter 5) are specifically linked with exhibits of condensed/displayed data.
- Throughout the study the researcher has been upfront concerning any personal assumptions, values, and biases, and how these may have come into play during the study (Appendix I(4) – Role of the Researcher).
- Finally, feedback during data collection and after the findings was sought from a small group chosen from those who had participated in the interviews and who were prepared to give of their time.

3.4.7.2 Validity/reliability/credibility

From the outset the researcher acknowledged concerns expressed by scholars such as Dey (2007), (Flick, 2014) and Nelson (2016) that questions on validity and reliability are particularly problematic for qualitative researchers. However, whilst concerns have been expressed on this area for qualitative research, it is important to acknowledge that within academia there is much debate still ongoing around their definition and application (Flick, 2014).

Influenced as this work is by an interpretivist paradigm and subjectivity, this work is therefore not about producing an objective, empirical based piece of work but rather one that explored the mental construct of participants experience of their world through their discourse with that of the researcher's own experiences. Thus, aiming to co-produce a better understanding of the phenomenon of interest, acknowledging from the outset the philosophical standpoint that as researcher we are part of the world we study, not isolated from it or the data we collect.

Consequently, instead of trying to produce a '*consistency in measurement*' or truth of interpretation (Anderson and Arsenault, 2004, p. 12) this researcher acknowledges that the output produced '*is one of reading the texts*' which reflect researcher and participants subjectivities and as such there is the possibility of '*numerous other readings possible*' (Duncan 1996, p 161 cited in Neuendorf, 2002, p. 12) as '*meaning is never fixed, always open to question, always contestable...*' (Burr, 2000, p. 39).

As this research therefore is about focusing and exploring participants experiences, the issue of replication of its findings is somewhat limited, primarily as both different researchers and participants arguably will have different past experiences as well as dissimilar contextual understandings.

Consequently, this researcher problematises validity, reliability, credibility, and replicability yet maintains that the work holds true due to the grounding of the codes with the data collected and the contextualising of the themes using informed grounded theory practices. Whilst such issues may be seen by some as a weakness in the study, this researcher contends that this is not the most essential criteria for the research; rather one should see the research and its findings as a valid contribution where the experiences of participants are valued and considered relevant to the research phenomenon's understanding, in which one is seeking "*to demonstrate a good fit between constructed realities of respondents and the reconstructions attributed to them*" (Guba and Lincoln, 1989, p. 237).

The findings from this research will be contextualised with an examination of the findings set against extant literature to ensure resonance, supporting Urquhart's (2013) contestation that it is both '*necessary and desirable*' to align emergent theory to extant literature (ibid, 2013, p. 136); in addition the informed grounded theory analysis is grounded in the data as part of an abductive theorising

process thus providing substantiation for the combined approach, and presented as a validation criteria if necessary of the analysis.

Furthermore, to allay concerns over the problematisation of validity, reliability, credibility and replicability, the following actions were also undertaken:

- At the outset the clarity of the research goal was demonstrated by the research question being fully stated and predicated on a perceived lacuna within extant literature and is congruent with the research design.
- The role and status of the researcher was unequivocally indicated.
- The analysis of the data presented in the findings demonstrated meaningful analogy across data sources.
- The data was collected across a stratified selection of senior management across the case study organisation deemed with responsibilities for the operationalism of the servitization strategy and thus appropriate to gain the rich contextual data necessary to address the research questions.
- Finally, reflexivity and data quality checks was encouraged through both ongoing coding checks and development of analysis findings being subjected to a '*peer debriefing*' (Symon and Cassell, 2012, p. 207) in which a trusted colleague both challenged the researcher's assumptions and ensured that any tacit understandings were made explicit by acting as a 'sounding board' throughout the research process.

Thus, the qualitative methods described in this chapter were specifically designed to capture and understand participants *lebenswelt* in relation to the immediate and future challenges facing the case study organisation, and thus present an '*insight into the complicated and personal truths of participants that cannot be separated, influenced and inspected ...*' (Hall and Roussel, 2014, p. 41) and cannot be reduced to mere statistical certainty as individuals continually construct and negotiate meanings as their experiences develop.

3.4.8 Theorising strategy

Authors, such as Bryman and Bell (2011) and Robson (2002), have described the general principle of a research strategy, and that any method employed, as having to be appropriate to the question(s) a researcher wants to answer. As such a key first stage is to ensure that the researchers design and research paradigm are congruent with their belief on what constitutes reality (Mills, Bonner and Francis, 2006a).

In this study, a relativist and interpretivist paradigm was utilised, disputing the existence of an objective reality, preferring to see reality as something that is constructed in the mind of the individual (Ponterotto, 2005) and thus has multiple individual realities influenced by context (Mills, Bonner and Francis, 2006b), each one as valid as the other (Schwandt, 1994); therefore the research strategy would be one appropriate to generating theory from data within such a perspective. As the study is explorative in nature and given the variety of divergent conceptual modes to understanding of paradoxical tensions together with the paucity of empirical studies utilising a paradox lens to support servitization challenges, a form of grounded analysis was utilised in this study as the theorising strategy.

In 1967, Strauss and Glaser published their seminal work 'The Discovery of Grounded Theory' (Glaser and Strauss, 1967) describing it as '*the discovery of theory from data research systematically obtained and analysed in social research*' (ibid, 1967, p.1). However, in 1990 with the publication of the 'Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory' (Long, Strauss and Corbin, 1993) a divergence of opinion on how to conduct grounded theory appeared between Glaser and Strauss, with Strauss now favouring a more prescriptive structure, which was the antithesis of Glaser's approach.

Despite considerable controversy concerning what grounded theory is and entails (Bryman, 2004; Charmaz, 2000); nevertheless, Strauss and Glaser did lay down the '*foundation for sound methods, as well as analysis*' of data (Charmaz, 2008) and it is possible to extract the defining features of their 'classic' grounded theory. These features consist of the simultaneous collections of data and its analysis,

the development of emerging codes from the data, theoretical saturation, constant comparison (making comparisons at each stage of data analysis) aid to the generation of concepts and categories, using memo writing and finally the conducting of a literature review.

In this study, the researcher chose to reject the 'classic' grounded theory for that an informed grounded theory approach (Thornberg, 2012) in that it allows one to address 'how' and 'why' questions whilst at the same time upholding the complexities that compose the fabric of social life (Charmaz, 2008). It also places a precedence on the phenomenon being researched, seeing data and its analysis as being part of a shared experience between the researcher and participants (Charmaz, 1995, 2001, 2003) and supports the use of extant literature and theories as, *'possible source of inspiration, ideas, "aha!" experiences, creative associations, critical reflections, and multiple lenses, very much in line with the logic of abduction'* (ibid, p. 249).

Such a position is in stark contrast with Glaser's (1992) 'tabula rasa' dictum that *'there is a need not to review any of the literature...for fear of contaminating, constraining, inhibiting, stifling, or impeding the researcher's analyses of codes emergent from the data'* (ibid, p. 31). However, the very idea of collecting and interpreting data free of any prior domain or phenomenon theory is challenged by many researchers (Strauss and Corbin, 1998; Chalmers, 1999; Schreiber and Stern, 2001; Thayer-Bacon, 2003; Charmaz, 2006; Thornberg, 2012) and in reality, many academics submit to the idea that researchers should not only know prior knowledge, but should embrace the concept of reading across other research domains as a method *"for enhancing their theoretical sensitivity by knowing many theoretical codes"* (Thornberg and Thornberg, 2012, p. 246). However, it also supports viewing such literature evaluation from a *'theoretical agnostic'* position (Henwood and Pidgeon, 2003, p. 138), advocating that researchers treat all extant theories and concepts as conceptual proposals that are open to being challenged.

Consequently, and line with Bruce's (2007) contestation that a responsible researcher should state from the outset of their research their *'theoretical understandings'* (ibid, 2007, p. 57), this researcher acknowledges that as a key component of his research strategy was a systematic literature undertaken

prior to commencement of the case study (See Chapter Two). The review was seen as not only allowing for a deep and critical immersion into the subject fields, but also as a possible source of inspiration, creative associations and critical reflections (Thornberg, 2012) later on in the data analysis stages, very much in line with the concept of abduction.

Theoretical pluralism (Midgley, 2011) was also utilised in evaluating data, where using different theoretical perspectives and discussions with both participants and academic staffs were utilised to help shape the researcher's interpretation. Such a conjecture is consistent with that of Kelly's (1955) assertion that only through the course of social interaction and relations with others, can we develop a system of meanings or schemas to explain our understanding of the world and their similarities, differences and distinctions. Explaining such differences is where the interconnectedness of rich data collection with a comprehensive understanding of the phenomenon under investigation comes to the fore enabling a hermeneutical approach to be utilised bringing the often hidden meanings ensconced within the subtle nuances of a participant's discourse (Charmaz, 2000, 2006) to the surface.

3.5 Data collection

This section presents an overview of the procedure for collecting data, which consists of case section and primary data source and collection.

3.5.1 Case selection

Stake (1995) advises that the selection of cases should be based on the opportunity they offer to learn something, with Eisenhardt (1989) and Pettigrew (1990) agreeing that researchers should consider extreme situations, critical incidents, social dramas, 'polar types, outliers and mavericks, where the phenomenon under investigation is both intense and visible (Symon and Cassell, 2012, p. 361). Accordingly, section 3.4.4 discussed and identified the selection of an appropriate case study to undertake this research, where initial investigation of the organisation identified it was facing considerable challenges to its operations both externally and internally. A brief summation behind this assessment is set out below, which better positions the research context and give substratum to the unfolding analyses and findings:

- In February 2017, the case study organisation posted its largest ever pre-tax loss of £4.6 billion; including a £4.4 billion reduction in assets, or write-down, on financial hedges that the company used to protect itself against currency fluctuation. Moreover, the company received the largest corporate fine in British history of £671 million to settle bribery and corruption charges brought by the UK Serious Fraud Office, the US Department of Justice, and Brazilian authorities.
- Prior to 2018, the corporate company had operated with five operating businesses: Civil Aerospace, Marine, Defence, Land and Nuclear. However, on 17Jan18, it announced that it was embarking on a further simplification of its business model by reducing the five operating businesses to three core units based around Civil Aerospace, Defence and Power Systems with the Navel Marine and Nuclear Submarines operations being consolidated under the Defence business unit.
- In line with this restructuring, the case study organisation announced they would also be carrying out a transformation programme seeking to rationalise Back Office functions, simplify processes and remove a swathe of middle management functions all with the aim of delivering cost savings of around £400 million per year by 2020, with an up-front restructuring bill of some £500 million. The restructuring was likely to see the redundancies of some 4,600 personnel, with 3,000 earmarked to be from the UK.
- At roughly the same time as the major restructuring was being undertaken, the case study organisation announced due to on-going issues surrounding a significant engine programme, the need to make available some £554 million to cover the costs of airlines having to take aircraft out of operational use whilst the organisation sought a solution. This charge contributed to a pre-tax loss for the company in the first half of 2018 of £1.26 Billion; although the actual cost of fixing the problems would be around £450m in 2018, £450m in 2019 and £350m in 2020, with the work aimed to be completed by 2022.

Moreover, the SBU chosen for studying was financially the most profitable arm of the global manufacturing group, accounting for 51% of the Group's underlying business revenue in 2019 (Case Study Annual Report, 2019, p.2) and its continued success was seen as central to the health of the entire manufacturing group. Accordingly, these characteristics identified above convinced the researcher that this organisation as an information rich environment in which to address the research question.

However, it is worth acknowledging from the outset that whilst one could argue that the case study choice represents an 'extreme' or 'deviant' case, the aim from the beginning of this research was never to produce conclusions which were generalisable to other organisations across the sector, but rather to generate findings which contribute to a greater '*theoretical insight*' (Eisenhardt, 1989, p. 539) and wider understanding of the research phenomenon to aid in the development of a broader understanding of a servitization strategy theory (Martín-Peña, Pinillos and Reyes, 2017).

3.5.2 Primary data source and collection

Mintzberg (1979) posited that in looking for creative insight one requires a more in-depth descriptive approach to case studies, and as already discussed a researcher's findings should be judged according to how 'interesting' they are to the researcher as well as those involved in the same field of study.

However, the presentation of these 'interesting' findings requires the collection of appropriate data. In this research, the use of single case study design allowed for an in-depth enquiry into the phenomenon of interest. Noting that the use of a single case study can be criticised on the grounds of external validity or generalisability (Bryman and Bell, 2011), this researcher sought to capture a sufficient amount of quality evidence in order to provide a comprehensive theoretical examination of the phenomenon of interest and develop a deeper understanding of its complexity (Robson, 2002; Charmaz, 2006; Bryman and Bell, 2011; Yin, 2014).

Appendix H, section H.5 presents details of various data gathering methods available for research, together with reasons for their rejection in this study. For this research, it was decided that the main source of data would come from interviews, supplemented by archival documents. The interviews conducted were semi-structured in nature enabling the researcher to prepare questions guided by

identified themes from the literature review in a consistent and systematic manner, interspersed with probes designed to elicit more elaborate responses, as well as providing the flexibility to probe lines of additional enquiry as the result of participants' responses.

A research protocol was created as a prompt to enable the researcher through the use of a broad set of themes to direct the conversation towards topics and issues relevant to the phenomenon of interest (Qu and Dumay, 2011). In this study the use of interviews as a line of research was deemed critical as the researcher was looking to explore and describe the 'quality' and 'nature' of how people behave, experience and understand their world through a holistic snapshot of words and views of participants (Alshenqeeti, 2014). To achieve such an aim it was essential that participants were allowed to "*speak in their own voice and express their own thoughts and feelings*" (Berg, 2007, p. 96).

All interviews were scheduled in advance via email and sent directly to the respondent or to their secretary. The email contained an outline of the research, explicitly stating that participation was voluntary, and that the interviewees' input would be treated as confidential, it advised that permission would be sought at the interview to audio tape the proceedings for the purpose of transcribing the discourse for data analysis; however, two participants did not wish the session to be recorded, but were nevertheless happy to engage in the research, permitting the researcher to scribe written notes as necessary. All other participants were content to be recorded and, in some cases, even expressed the view that the activity had been a cathartic one!

The interviews themselves were held, where possible, at the participants place of work, and if not then conducted over the phone. The interviews were conducted from Feb-Oct 2017, using a semi-structured approach, with prompts kept to a minimum, as this was deemed the most likely way to foster participants reflections by being sufficiently general to cover a wide range of experiences yet focussed enough to extract the participants specific experiences (Charmaz, 2006). A more detailed description concerning the researcher's initial contact with the case study and consideration on research sample size and saturation are covered at Appendix G. Table 3-3 is a summary of field data collection.

Table 3-3. Field data collection

<i>Activity</i>	<i>Field data</i>
<i>Method</i>	Semi-structured interviews (face-to-face or telephone)
<i>Time period</i>	Feb – Aug 2017
<i>Total Number of Interviews</i>	31
<i>Totality of material collected</i>	32 hrs & 15 mins of interviews, 376 pages of transcribed text
<i>Participants aggregate years of service with case study</i>	475 years

3.6 Data analysis

The analysis of data followed analytical tools of an informed grounded theory approach (Charmaz, 2000, 2008, 2011; Mills, Bonner and Francis, 2006; Thornberg, 2012). The first step began with the transcription of over 32 hours of interviews, resulting in 31 transcripts, comprising 376 pages of text. NVivo 11 was used to support the analysis of all transcripts.

In line with grounded theory tenants, exploring the data collected necessitated the interview transcripts being repeatedly analysed by moving back and forth across the data, using the researcher's personal reflections to extricate and interpret data by completely immersing oneself in it (Glaser and Strauss, 1967). Adopting such a broad approach allowed for the emergence and identification of any meaningful patterns salient to the phenomenon under investigation (Charmaz, 2000, 2001, 2005, 2008; Yin, 2014).

Stemler (2001) proposes two approaches to the coding of data: emergent, where codes spring from the text; and *a priori*, where the codes are created beforehand using prior knowledge and then applied to the transcripts. Whilst there are no hard and fast rules to coding (Faherty, 2010) this researcher chose to embrace the subjectivity of his research and therefore embraced an emergent approach. Overall, the analytical process was undertaken in two stages: crafting a coding frame and analysis. The crafting of the coding frame is discussed in the following sub-section in more detail with the analysis from the coding frame discussed in Chapter Four.

3.6.1 Crafting a coding frame

In line with procedures described by (Charmaz, 2003) the development of an analytical coding frame was done over a number of stages and carried out consecutively and iteratively. For simplicity, a brief description of the process is detailed next.

Whilst Strauss and Corbin (1998) propose that grounded theory is undertaken in three stages: Open coding, Axial Coding, and Selective coding, the coding process chosen for this research follows that of Charmaz, 2000, 2001, and Charmaz, 2008, in which the researcher adopted the terms Initial and Focussed coding for the first two stages of the analysis.

The role of Initial coding aims to discover emergent grounded theory from the field of inquiry (Mills, Bonner and Francis, 2006) by fracturing '*data into pieces and distinct codes*' (Charmaz, 2006, p. 60) looking to discover reoccurring patterns albeit tentative and provisional and '*through breaking the data down in analytical relevant ways ... lead toward further questions, further questions about the data*' (Saldana, 2016, p. 9). It is the first step in data analysis in which a researcher develops codes from the data, ending when one locates a core theme. In this research the initial coding was subjected to a two-stage analysis process: first, to identify key themes in the data and, secondly, to evaluate how these themes were presented in each of the cases.

However, the analysis was not as linear as presented here; rather, it was iterative in nature, with first stage codes developed after repeated coding, revision, and refining until a comprehensible relationship emerged. In traditional grounded theory (Glaser and Strauss, 1967) recommended that a researcher does not try to impose his own codes, rather they should come from the data; however, such an emergent approach was difficult as having undertaken pre-reading on the subject under investigation the researcher found himself 'listening to the participants voices' as he read the transcripts but 'reading between the lines' and inferring what they were getting at. While such presumptions may seem problematic one can argue part of an abductive approach relies on a sense

of reflection allowing one to interpret what one discovers (Marton, 1993) and is supported in the practice of an informed grounded theory approach (Thornberg, 2012).

During the initial coding stage, the data was analysed using a holistic approach. This method was employed as it allowed for a single code to be applied to large chunks of data to construct first cycle codes (Miles, Huberman and Saldana, 2014) rather than traditional line by line coding; in essence, it was used to capture an overall impression of what was being discussed. Such coding is seen as a useful method '*when a researcher has a general idea as to what to investigate in the data*' (ibid, 2014, p. 77).

In this research the initial codes were the result of examination of participants discourse through transcribed interviews. The data was examined for '*sensitising concepts*' (Charmaz, 2008, p.16) which can give a researchers their preliminary indication as to how the data may relate to the research questions. A limited quantitative approach was utilised in the first cycle data analysis through the introduction of frequency counts to compare and contrast data and begin to highlight the '*processes*' of how the data may shed light on to the research questions (ibid, 2008, p. 51).

Once the data had gone through its first cycle coding, the initial codes were then turned into categories to show early patterns identified in the data. This second stage termed '*focussed coding*', (ibid, 2008, p. 57) or '*axial coding*' in traditional grounded theory (Strauss and Corbin, 1998, p. 24) is arguably the first time a decision is required on which initial codes make the most analytical sense to synthesise into higher level conceptual categories. It is at this stage that a researcher posits questions such as 'why', 'where', 'when' and 'how come' to the data to discover relationships between the categories and thus seek to understand how a category is demonstrated (ibid, 1998, p. 127).

In a traditional grounded methodology, a third stage of data analysis, known as '*selective coding*' (ibid, 1998, p.143), would be undertaken to integrate and refine the theory with the aim being to delineate the '*properties and dimensions of a category*' (ibid, 1998, p. 60) around the core, central axes (Soldana, 2016); or to paraphrase Strauss and Corbin (1998) if first cycle coding fractures data, then selective coding brings it back together again. However, in this research the 3rd stage – selective coding – the researcher instead chose to utilise the typology of Smith and Lewis's (2011) organisational tensions as

the key central themes in which the initial coding and focussed codes would be integrated. The aim being to present '*a denser, more complex, and more precise data*' picture (Charmaz and Mitchell, 2002, p. 515) of the research phenomenon.

While the researcher acknowledges that such an approach does not follow traditional grounded theory methods, it is argued it is appropriate for realising the answers to the research question proposed and in no way devalues the validity or credibility of the data findings. Indeed, Suddaby (2006) opines grounded theory techniques should be adaptive, enabling data to be actively interpreted by a researcher and prevent one from become a slave to the mechanical application of techniques (Volkoff, Strong and Elmes, 2007).

3.7 Ethical considerations

To address questions of ethical consent this study was conducted in accordance with extant Cranfield University protocols. It also embraces Kvale and Brinkman's (2009, pp.70-76) four guidelines to address ethical uncertainty, which are presented at Appendix H.

3.8 Summary

This chapter reviewed the methodology adopted in this study. It clarified the research philosophy and design, as well as the data collection and analysis processes, and ethical considerations. The next chapter explores the 2nd stage two of the abductive approach used in this thesis - the results of the exploratory coding analysis.

4 Abductive approach: Stage Two - Exploratory analysis: Coding analysis of data

This chapter starts the second of the thesis' ternary abductive principles - exploratory analysis - and concentrates on the results from the coding stages of the informed grounded theory analysis of data collected from 31 interviews. It consists of a brief overview of the initial, focussed, and selective coding analysis employed. The following sections will list and explain the codes and categories derived from the analysis of the participants interview transcripts.

4.1 Details of Coding

The results of the coding analysis in this section provide an overview of the initial and focused coding undertaken in analysis of the transcripts to develop the 3rd tier of the framework, this was achieved by analysing the transcripts and continually grouping the analysis into codes, categories and key themes following a grounded theory approach (Charmaz, 2000, 2001; Charmaz, 2008).

The process of coding was undertaken in two phases. Initial coding, which is the stage where one initially groups the data into codes and focussed coding which through comparing data one develops codes into categories. These stages are similar to that of grounded theory's open and axial codes. Once these categories were identified they were then '*organised around a central explanatory concept*' (Strauss and Corbin, 1988, p. 161) – that of Smith and Lewis's (2011) typology of organisational tensions, which was utilised as the 3rd/primary tier (or selective coding) of analysis in the framework.

The analysis of the participants discourse from an interpretivist epistemology enabled the researcher to develop both valid subcategories and see the connectivity between them, but also ensured that the coding process adopted was an iterative exercise not a simple linear activity (Miles, Huberman and Saldana, 2014).

4.2 Initial coding

The initial codes constructed helped the researcher create a roadmap from participants' interpretation of events, social interaction, and use of language to discover the challenges, as they saw them, facing

the case study organisation. These initial thoughts were coded using a '*holistic*' (Op Cited, 2014, p. 77) approach enabling the researcher to '*simultaneously categorises, summarises and account for each piece of data*' (Charmaz, 2008) prior to the development later on of more nuanced, meaningful, and parsimonious categories. Appendix E captures the codes derived from initial analysis.

The total frequency of 1,740 comments across the 53 categories identified in Appendix E, were taken from an initial analysis of the 31 interviews conducted as part of this research and presented early markers for further exploration. From a philosophical point of view, one could argue that the construction of codes devalues the essence of the meanings, assertions, and fabric of participants discourse, in that it ignores the distinctiveness and complexity of the language used during the discourses. However, as previously stated, the purpose of initial coding was not to present a final picture of the phenomena under investigation, rather to signpost areas of possible future and more comprehensive investigations.

As such, one can view these 53 tentative categories as '*sensitising concepts*' (Charmaz, 2006, pp.16-17), identifying emergent ideas as criterion for further and more detailed analytical exploration. For this study the frequency of the categories can be viewed as those issues that vexed the participants the most. Their interconnectedness will be explored later as part of an interpretive portrayal of key points taken from the data.

The comparative frequencies of codes across the interviews indicate the issues that participants most often discussed with Table 4-1 presenting the Top Twelve comparative frequencies of codes across the interviews.

In reviewing these codes, one could argue that the most frequent code, that of 'customer expectations' (code 49) pertains to the perceptive challenges' participants face because of the increasing complexity and sophistication of the organisation's clients' needs and wants, as well as the increased external competition. This common code offers an insight into the temporal and resource challenges the organisation was currently facing, and one recognised by all participants as critical for current and future organisational health. Such a challenge is reflected in the contestation of 'competing mindsets'

(code 4), which hints at possible issues surrounding the cultural anxieties within the organisation, possibly linked to the previous code, but also perhaps over the direction and capability of the organisation to transform itself to meet the challenges of the 21st century, a concern continued across the participants' interview coding into the third/fourth and fifth most noted codes: 'transformation & Change' (code 7), 'issues concerning alignment' (code 8) and 'issues of growth and speed' (code 39).

Table 4-1. Twelve most frequent codes

No	Description of Code	Code No	Frequency
1	Customer expectations	49	109
2	Suggestion of possible differences in mindsets within the organisation	4	107
3	Transformation & Change	7	101
4	Issues concerning alignment	8	89
5	Issues of growth and speed	39	72
6	Short-term and long-term thinking	27	62
7	Shiny toys	42	62
8	Aftermarket thoughts	47	54
9	Issues of employment longevity	34	53
10	HPC	9	50
11	Programme & project management issues	43	50
12	Challenges with CSCs	16	48

Indeed, the frequency or anxiety expressed by the first five most noted codes could indicate participants consider organisational alignment and the drive for growth to be complementary activities, as Table 4-1 above shows the spread of the participants' code frequencies for the first three most noted codes (codes, 49, 4 and 7) had frequencies of 109, 107 and 101 respectively, although with a

considerable gap to fourth place (code 8) being cited 89 times and a similarly large gap then between fourth and fifth place (code 39) noted 72 times.

Beyond the top 1/5th of the initial codes, a number of those remaining would seem to infer participants' observations as to how leadership styles and behaviours were operating. Codes 13, 18, 35, 36, 39, 46, and 47 pointed to early similarities of participants views on the various challenges current leadership behaviours and outcomes were having on the business. Although there were some differences in participants' views, they nevertheless pointed to a useful area to further explore.

Another area noteworthy of further investigation identified by the initial coding was that of participants' views on how they perceived both their value and that of the organisation. Code 17 and code 33 showed where participants raised issues over the sphere of influence the 'mothership' that is Derby has on the business and the diversity within the organisation. There is clearly a sense of pride felt by employees in working for the case study organisation (code 34). However, such a belief can raise competing issues (code 3) within departments between resources, direction of company strategy, and priorities.

Codes 16 and code 12 highlight participants acknowledgement of the challenges that the UK organisational structures pose, with code 12 referencing opinions on the 'Customer service centres' and how both codes presented participants with the opportunity to present differing views on their ability to support changes needed to deal and cope with 'growth & speed' (code 5). Despite the lack of a visible organigram, many participants shared an informal ideation of the how the organisation worked (Code 38), perhaps instilled during their considerable careers (code 9).

Financial concerns were expressed across a range of conversations though initially divergent they nevertheless present themselves as cyclical in nature. 'External verse internal financial pressures' (code 25) and 'Customer vs financial challenges' (code 52) acknowledge participants conflicting views over pressures concerning balancing 'short-term/long-term thinking' (code 6) with the need to deliver customer satisfaction and innovation (codes 37, 29, 1 and 26), fight off competitors (code 28) perhaps by agile business plans (code 15 and 51) or not; either way there was acknowledged a requirement to

provide oversight (code 31 and 23) though not always supported by either systems (code 23 and 42) or practices (code 11, 21, 48, 49, and 53). Participants expressed concerns over costs of production (codes 20 and 43) and cash returns/profit (codes 44), possibly because of contract concerns (codes 8 and 32) or conflicting opinions on the way personnel issues are perceived (codes, 14, 30, 40 and 41) or indeed on the merits of further training (codes 22, 27, and 45).

4.2.1 Summary of initial coding

As stated previously, initial coding is the first stage of a grounded theory approach (Charmaz, 2005, 2006, 2008). During this preliminary stage the 31 interview transcripts were analysed, and the inductive data coded, using an iterative process of moving between the data and analysis in a heuristic coding process seeking to identify active codes abstracted from the participants interview transcripts. As a result, this first stage of coding resulted in the construction of 53 initial codes generating a frequency of 1740 responses.

This initial coding was just that, a snapshot in which the researcher sought to gain an early feel for the data and hopefully gain a level of confidence that there was a 'story to be told' and derive confidence that the data deserved more in-depth analysis. The next stage would be conducted under the guise known as the 'focussed coding' stage.

4.3 Focussed coding: Pattern codes

During the focussed cycle stage of the process a researcher is looking for threads that tie elements of the data together (Saldana, 2016). Focussed coding created categories constructed from the variety of codes and patterns from initial coding suggesting possible variables that illuminate the categories. Consequently, at this stage, it is important to act on the data rather than approach from a passive observer perspective.

This is achieved by a researcher moving between interview transcripts to compare opinions and interpretations of events to understand how informant's socially construct and characterise the challenges facing their organisation. As such, this stage of coding sought to identify patterns/categories as a means of reducing the initial/first cycle coding groups into smaller and more

meaningful categories, which in a layman's term could be described as themes, causes/explanations, relationships amongst people, or a happening (Miles, Huberman and Saldana, 2014) or what Strauss and Corbin (1988, p. 124) call a '*phenomenon*'; an event which participants see as important to them. A characteristic then of this stage of analysis is that of developing inferential or explanatory codes.

For this stage the empirical analysis the 53 initial codes were grouped into patterns of inference or explanation. The researcher recognised that this stage '*is not entirely a linear process*' (Charmaz, 2006, p. 58), but rather one where the researcher needs to move back and forth across the data and its analysis in an iterative process encouraging one to interact with the data fully, checking any emerging theoretical categories that may be inferred.

In this study, the focussed coding produced the construction of 10 categories which represent a deeper understanding of the initial codes and whose offered a means to '*explicate ideas, events, or processes in your data*' that '*may subsume common themes and patterns in several codes*' (Charmaz, 2006, p.91). As such they presented a more nuanced picture of the participants anxieties by drawing together a lot of the data from the initial codes '*into more parsimonious units of analysis*' (Miles, Huberman and Saldana, 2014, p. 86) . These revised 10 categories are displayed at Table 4-2 below.

Table 4-2. First cycle/initial codes

FOCUSSED/SECOND CYCLE CODES: CATEGORIES	INITIAL/FIRST CYCLE CODES	INITIAL CODE NUMBER
CHALLENGES AROUND QUESTIONS OF IDENTITY (CATEGORY 1)	Cultural Diversity.	Code 17
	Derby Centric.	Code 33
	Stress the impact Pride may have on behaviours.	Code 34
	Suggestions of possible differences in mindsets within the company.	Code 2
	Refers to bureaucracy issues.	

		Code 48
CHALLENGES OF ORGANISATIONAL POLITICS (CATEGORY 2)	Differences in perspectives	Code 19
CHALLENGES BROUGHT ABOUT BY ORGANISATIONAL CHANGE (CATEGORY 3)	Transformation & Change.	Code 3
	Issues concerning alignment.	Code 4
	HPC	Code 10
CHALLENGES OF TRAINING (CATEGORY 4)	Refers to skills for today & tomorrow.	Code 22
	Internal focus to training.	Code 27
	External focus to training.	Code 45
CHALLENGES FACING BUSINESS MODEL (CATEGORY 5)	Business plan stresses.	Code 15
	Focus of the business.	Code 51
CHALLENGES OF STRUCTURES (CATEGORY 6)	Organisational structure	Code 16
	Challenges with CSCs.	Code 12
	Informal 3-legged structure.	Code 38
	Stable vs Dynamic.	Code 53
	Scalability	Code 49
CHALLENGES OF LEADERSHIP (CATEGORY 7)	Leadership Structure.	Code 13
	Questions over command & Control vs empowerment.	Code 18
	Accountability and autonomy.	Code 35
	Leadership role.	Code 36

	Power & control governance comments.	Code 39
	Leadership decision-making.	Code 47
	Questions on Trust.	Code 46
CHALLENGES AROUND RESOURCING AND RISK (CATEGORY 8)	Short-term & long-term thinking.	Code 6
	Refers to equipment concerns.	Code 43
	Risk appetite & its management.	Code 21
	Employment longevity.	Code 9
	Headcount constraints.	Code 14
	Talent loss through redundancies.	Code 30
	Eng vs Service (Personnel).	Code 40
	Allocation of human resources.	Code 41
CHALLENGES BROUGHT ABOUT BY DRIVE FOR GROWTH (CATEGORY 9)	Issues of growth and speed.	Code 5
	Competitors.	Code 28
	Customers market growth.	Code 37
	'Shiny toys'.	Code 7
	Programme/Project issues.	Code 11
	Digital space.	Code 26
	Product/Service Innovation.	Code 29
	TotalCare concerns.	Code 32
	Aftermarket thoughts.	Code 8
	Industrialisation to support growth.	Code 50
	Customer expectations.	Code 1

	Communications.	Code 24
	Stakeholder management.	Code 31
	Reporting systems & KPIs.	Code 23
	Legacy platforms.	Code 42
CONCERNS OVER FINANCE	External vs Internal financial pressures.	Code 25
(CATEGORY 10)	Refers to Unit Cost issues.	Code 20
	Refers to Revenue issues.	Code 44
	Customer vs commercial financial challenges.	Code 52

The categories captured large amounts of data into common themes of conjunctural causality through the polyphonic opinions and anxieties of participants, akin to a cluster analysis in quantitative methods, covering a variety of topics from the effect that the business drive for growth was having on the organisation's management of risk; its effect on business planning and organisational structures and resources, together with challenges around identity; as well as the challenges perceived around the need for a change in leadership style to match the drive for organisational transformational change, right through to the thoughts expressed around training.

Sub-section (Section 4.3.1) presents an example of the iterative process and conceptual thinking undertaken during this stage of analysis, showing the development of the codes supporting a specific category, in this example, **Category One: 'Challenges around questions of identity'**.

4.3.1 Interview category One: Challenges around questions of identity

Category One 'Challenges around questions of identity' was a theme constructed from 'cultural diversity (code 17), 'Derby centric' (code 33), 'stress the impact pride may have on behaviours' (code 34), 'suggestion of possible differences in mindsets within the company' (code 2) and 'Refers to bureaucracy issues' (code 48). These five codes mimic the participants broad comments about their

feelings towards the organisation and whether they had changed during their employment, and the reasons why. One grouping within this broad-ranging category explored participants interpretation of a Derby centric pattern (code 33), and include as an example:

"Derby is very much a... you are a Midlands community. Most of the people who work here have been here 20+ years, their fathers would have worked here, their grandfathers would've work here...but it also means that people are very reluctant to change, and it also means that ...err... the heart of conservatism is in Derby they don't like change, they like things as they are..."

(Interviewee E8)

and

"I think a lot of the tension originally came from the people in Derby who were used to doing everything themselves...."

(Interviewee D13).

The second grouping in the category pattern is that of cultural diversity (code 17), in which participants express both positive and negative views of the cultural nature of the organisation. Examples of this category include:

"I think having Europeans now working in Derby has been a change for the good to be honest... I think we are kind of moving from, how would you put it, an old, staid, heavy engineering type of company to a more...umm... fast changing, nimble, you know, business, a customer value creation driven business...yeah... it's definitely changing..."

(Interviewee A1)

and ...

"I play cricket and I would say the cultures are quite similar! It took me 13 years before I was allowed any input into fielding places. It is very similar, there are people who play cricket in my village who have grown up together since the age of 6 or 7 years, they have been in the trenches together, they know each other extremely well, and therefore instinctively they will seek out one of the long-time crew to make decisions, and there is a bit of that which goes on in this place!"

(Interviewee B9)

and...

"It is an interesting question and I don't know why we haven't had more females, but then I was reflecting in this group, in the conversations we were having, that not too long ago I had advertised for a role working with me, that was quite a senior grade within (Name of case study

organisation), and I receive lots of applications, about 20+ applications internally, which is quite a lot of applicants I guess because it was for a senior management grade role...umm... but of those applicants there was only one or two women who had applied and when I looked at it there were other people that I thought should have replied and I wondered why they had not... so I wonder is there an issue?"

(Interviewee E19)

Within this broad category grouping there was also an implied judgement about the impact that organisational pride (code 34) could have on the ability to deliver change, for example:

You need to understand that people who have come through currently the various routes into (name of organisation), so apprenticeships, graduate schemes, etc, re brought into and through the strong culture in (name of organisation) and develop a great sense of pride of being associated with the organisation.... 93% of employees are proud to work for (name of organisation) according to the latest employee survey...so change can be hard for some people to grasp

(Interviewee A10)

As well as reasons behind people's longevity with the organisation ...

Well, I think firstly, I think it is a place where its heritage is sort of in the very DNA of the place, it resonates you know, in the pride people feel knowing that our products are amongst the best in the world and must continue to be so. So that I think is within everything we do, so certainly when I go around the world, I am proud to be working for (name of organisation) and always have been and that is if I'm honest is why I stay.

(Interviewee C28)

and

"after 26 years in this company I guess you have to keep going, don't you? You have to keep going!"

(Interviewee E21)

However, beneath the expressions of pride in working for the organisation there was also concerns for the future, for example:

"Some people will talk about how proud they are of (name of organisation) and how proud of the way they work which in general people are but only on a very finite little area nobody looks bigger picture, nobody looks broader, and then when they do start to do that these issues start to unravel that's when they close down."

(Interviewee E14)

And...

"umm... I feel like I have this weird loyalty to (name of organisation), I may be institutionalised after 19 years, but you kind of think" they will look after me, I have always done my best for them" but what I saw happen to certain individuals and people really shock my confidence, and my trust in the leadership ... it was an individual feeling that and I imagine, indeed I know, there were other people who felt like that also."

(Interviewee E20)

The fourth category within the identity theme related to bureaucracy issues, such as those affecting acquisitions and their perceived role in failing to achieve the desired results, for example:

"... we aren't very good... once we acquire something, we think we've got over the hard work, we've done that. The actual integration and going in and sending people in afterwards is what we're not very good at. So, we can get over the fire-fighting bit, you know, we need the company we must get it... we can do that. The actual bit after the event, once you've done that and it's settled down, that bit we just don't know how to work it!"

(Interviewee E8)

and

"yes, so that is one of the things that I have learnt over the last nine months is you are always going to have that performance engine, and the performance engine is always necessary to do the day-to-day activity and that needs to be as efficient and lean as it can, and be the best it can to deliver what it has to deliver. However, if you try to put innovation into that environment then it will get stifled and steamrolled by the dominant logic performance engine that is just there to get engines out of the door and make money."

(Interviewee E15)

The fifth, and final code supporting this category of identity relates to the possible challenges behind competing mindsets (code 2) within the organisation. The role of mindsets can be summarised as the *"basic assumptions, beliefs and core values, goals and expectations shared by a group of people who are committed to a specific field, and what they will use as rules to guide their attitudes and practices...."* (Fang, Kang and Liu, 2004, p. 299). In this coding one can start to feel that there are competing mindsets at work within the organisation, and not just the traditional corporate verses employees, or that between a Goods-Dominant Logic (G-DLogic) verses a Service-Dominant Logic (S-DLogic) (Vargo

and Lusch, 2004, 2008) but perhaps more nuanced ones concerning the future direction and culture of the organisation, for example:

Umm...unfortunately in our company we've got at least a double-headed beast. We've got one beast called 'new product development' and another one called 'aftermarket'!... So, my chief engineer has changed, he's come from NPIerr... and he's struggling, struggling to get to grips with the challenges of not how clever you can be in designing modification, the challenge is how can you make more money, and how you can help the other functions make more money.

(Interviewee A5)

And how such a perspective is seen by some to require a change from the traditional G-DLogic mindset to one favouring a more S-DLogic:

I think the other one is 20 years ago, by and large, we sold products and hoped it failed just after the warranty finished (laughter)... I'm being a bit flippant that way, but now we are intrinsic to our customer operations in terms of how we provide services and...umm... as a consequence of that, we now have to have a totally different mindset in how we operate.

(Interviewee B4)

Such a challenge can then play itself out between different parties within the organisation depending where one sits, for example:

So, I think (name of organisation) is a company of two halves! Are we a customer company? are we a customer service company? ... Unfortunately, I think you get down to people over the road [Engineering] who quite frankly haven't got a clue! They never give the customer any thought whatsoever, as you say they look at their programmes, they look at their dates and they don't think this customer is going to be AOG (aircraft on the Ground) in seven days unless I do this thing bit earlier. Umm... and so I think you've got certain parts of the organisation very high on customer awareness and customer culture, and you've got unfortunately really very low, or way lower than it should be in other parts!

(Interviewee B27)

And so, the question of identity can be observed from participants' comments to be a challenge, that despite the much-vaunted success of the organisation in delivering a PSS strategy, palpably this was still an issue many senior managements were still wrestling with. Where such a challenge is deleterious to the organisation will be considered more fully later in this thesis when the impact of

tensions is examined. In the meantime, below are some quotes from participants highlighting the continued confliction over identity:

"(name of organisation) would like to describe itself as a services company! I still think it is an engineering company! We pride ourselves on our engineering acumen, as we would. I still don't think we are as good at delivering services as we should be....!"

(Interviewee C29)

"...we like service because it gives us money, revenue, it's where the profit is because the business model is not good! If we just sold an engine for a good price and made a reasonable profit, and yes obviously gave it some service or allowed other people to service it, I don't think we would be nearly as worried about the service company side of it, but because we are where we are, so services are critical to our whole revenue stream and our ability to reinvest! ... but I think if you pass this to 10 different people you might get 10 different answers"

(Interviewee, B27)

4.3.2 Summary of focussed coding

In this section of the analysis, the focussed coding, within an informed grounded theory approach, was presented and clarified. The resultant coding analysis resulted in 10 categories being developed that provided a more in-depth and nuanced analysis of participants' transcripts than initial coding. In essence, this stage sought to re-assemble data that had been 'fractured' during the initial coding process (Strauss and Corbin, 1998) and provide the categorical themes to be carried forward for the next stage of analysis.

Whilst other researchers may stress or find different key points from the analysis of the study's participant's discourse, the focussed codes selected are my interpretative rendering of what this researcher believed to be the important elements, contextualised, and amalgamated from the expressed opinions of the participants', and the experience and knowledge of the researcher.

4.4 Selective codes

As previously stated, the process of selective coding would not be completed in the usual way as prescribed, for example, by Strauss and Corbin (1998), but rather by adopting inferred agnostics, where in searching for more than a purely inductive approach to the case study research, the researcher moves

to that of an abductive approach, looking for all possible explanations for the phenomenon under consideration. Moreover, adopting a 'paradox lens' as a means of defamiliarization provides this study with the opportunity to present common things in an unfamiliar or strange way as a means of seeing things differently. This was the purpose of the methodology of this study, to review a phenomenon from a novel theoretical research paradigm, to search for confirmation of the paradigms validity when tested in the empirical world, and to uncover both plausible and perhaps surprising findings within the data.

Whilst the approach may be unorthodox it does not represent a weakness in principles of a grounded theory approach, but rather supports the approaches of other researchers (see for example Melia, 1996; Charmaz, 2000; Charmaz and Mitchell, 2002) who profess that traditional grounded theory is too rule bound and predetermined (Charmaz, 2011). Indeed, Ong (2012) goes on to argue that researchers who adopt a interpretivist grounded theory approach are in fact adopting '*Glaser's and Strauss's procedures of doing grounded theory with minor changes and then bases them on the paradigm of interpretivism*' (ibid, 2012, p.4).

Indeed, the stated aim of this research study was to use an integrative approach of combining domain knowledge with empirical data, to establish with research participants a mutually beneficial and safe environment to discuss issues freely, focussing on the meaning and process at both subjective and contextual levels through asking participants what they see as the problems or challenges they face paying particular attention to the language that they use, all steps that Charmaz (2005) supports as '*steps necessary to reclaiming the Chicago School underpinnings in grounded theory*' (Keane, 2015, p. 419).

These principles pervade the informed grounded theory approach, and are embedded in this research design, placing at the forefront the participants voices, with that of the researcher, and through conceptual analysis, ensured that the resultant findings were grounded in, and constructed via both parties experiences and interpretations.

After completing the focussed coding the next stage of grounded theory would be '*selective coding*' (Strauss and Corbin, 1998, pp. 143-162) a process that selects a series of core categories via the use of a higher level of analytical abstraction. This higher level of abstraction is where the researcher arguably becomes fully engaged in constructing, more refined and integrated categories, intertwining participants' voices with the experiences and mental map of the researcher's world. However, in this study the researcher took the four core themes and elements of organisational tensions catalogued by Smith and Lewis in their conceptual model (2011, p. 383) as his predetermined selective codes and inculcated within them the categories identified under the focussed codes.

As such the four predetermined selective codes represent principal activities of organisations: learning (knowledge), belonging (identity/interpersonal relationships), organising (processes), and performing (goals), (Smith and Lewis, 2011, p. 383) and are representative of organisational tensions that Smith and Lewis (ibid) contest are inherent in all organisations. In a sense they are an exaggerated product of all the previous analyses conducted in that these concepts seek to capture in a single word what '*this research is all about*' (Strauss and Corbin, 1988, p 146).

However, it should be also noted that the challenges identified can operate between as well as within these four core themes (Smith and Lewis, 2011) bridging the main themes with sub-categories of 'learning-belonging', learning-organising', performing-belonging' 'belonging- organising', learning-performing' and 'performing-organising'. Therefore, the integration of the focussed codes into the four key and bridging themes represented a framework that was data-driven and grounded analytically the storyline of organisational challenges captured through participants' discourse.

These identified challenges were synthesised within a holistic conceptual organising framework (Figure 5.1), capturing their complexity and interrelatedness, more so than that offered in the more normative and prescriptive accounts within much of the servitization literature (for example, see Brax, 2005; Baines, Lightfoot and Kay, 2009; Martinez, Bastl, Kingston and Evans, 2010; Baines and Lightfoot, 2014; Ulaga and Loveland, 2014). These challenges are examined further in Chapter Five.

4.4.1 Summary of coding analysis chapter

This chapter covered stage two of abductive thinking – Exploratory analysis. It presented the outcome of the analysis of the codes, categories and selective themes constructed through the initial, focussed, and selective coding stages. The concerns and challenges of what participants believed their organisation was facing today and, in the future, reflected in the various actors' interpretations were captured throughout the various coding stages. Therefore, the coding allowed for the identification of various challenges that participants highlighted concerns, and how such challenges were affecting the business.

These identified challenges were then synthesised within a holistic conceptual organising framework (Figure 5.1) that captured the dynamic, complex and interrelatedness of the challenges identified. In the next chapter, the analysis of the framework categories is explored in greater detail and addresses the final stage of abductive thinking (findings) – the development of theory.

5 Abductive approach: Stage Three – Theory development (findings)

This chapter concludes the analysis of the coding process by moving beyond a catalogue of organisation challenges into a synthesised framework of organisation tensions, Fig 5-1 refers.

Learning/Belonging Challenges	LEARNING Challenges	Learning/Organising Challenges
<p>Cat 3- Org Change- Incorporates comments On:</p> <ul style="list-style-type: none"> HPC (Code 10) <p>Cat 1 – Identity-incorporates comments on:</p> <ul style="list-style-type: none"> Bureaucracy Issues (Code 48) <p>Cat 7 – Leadership – Incorporates comments on:</p> <ul style="list-style-type: none"> Empowerment (Code 18) 	<p>Cat 4 – Training – Incorporates comments On:</p> <ul style="list-style-type: none"> Skills for today and tomorrow (Code22) External focus to Trg (Code 45) Internal focus to Trg (Code 27) <p>Cat 9 – Drive for Growth-Incorporates comments on:</p> <ul style="list-style-type: none"> Digital Space (Code26) 	<p>Cat 4 – Training – Incorporates comments on:</p> <ul style="list-style-type: none"> Skills for today & tomorrow – Lean (Code 22) <p>Cat 3 – Organisational Change-Includes comments on:</p> <ul style="list-style-type: none"> Transformation & Change (Code 3) Alignment (Code 4) <p>Cat 6- Infrastructure-incorporating comments on:</p> <ul style="list-style-type: none"> Stable vs Dynamic (Code 53)
BELONGING Challenges	Belonging/Organising -Challenges	Cat 6 – Infrastructure – Incorporates comments on:
<p>Cat 2 – Organisational Politics – incorporates comments on:</p> <ul style="list-style-type: none"> Differences in perspectives (Code19) <p>Cat 1 – Identity – incorporates comments on:</p> <ul style="list-style-type: none"> Impact of pride on behaviors (Code 34) Derby Centric (Code 33) Cultural Diversity (Code 17) <p>Cat 8 – Infrastructure – incorporating comments on:</p> <ul style="list-style-type: none"> Eng vs service (Code 40) 	<p>Cat 9 – Drive for Growth – Includes comments on:</p> <ul style="list-style-type: none"> Performance Systems/KPIs (Code 23) Legacy systems (Code 42) Product & Service innovation (Code 29) <p>Cat 1 – Identity – includes comments on Mindsets (Code 2)</p>	<p>Cat 6 – Infrastructure – Incorporates comments on:</p> <ul style="list-style-type: none"> Org Structure (Code 16) + Stakeholder Mgmt (Code 31) Challenges with CSCs (Code 12) Informal 3-leg structure (Code 38) <p>Cat 7 – Leadership – Incorporates comments on:</p> <ul style="list-style-type: none"> Leadership styles (Code 13) Control & Empowerment (Code 18) Trust (Code 46) Leadership decision-making (Code 47) Power & Control –Governance (Code 39)+(Code 35) Leadership role (Code 36)
Belonging/Performing Challenges	PERFORMING Challenges	Performing/Organising Challenges
<p>Cat 9 – Drive for Growth-Incorporates comments on:</p> <ul style="list-style-type: none"> Shiny Toys' (Code 7) vs Aftermarket <p>Cat 8 – Resources & Risk-incorporates comments on:</p> <ul style="list-style-type: none"> Eng vs service (Code 40) 	<p>Cat 9 - Drive for Growth-Includes comment on:</p> <ul style="list-style-type: none"> Aftermarket concerns (Code 8) Growth & speed (Code 5) Customer expectations (Code 1)+(Code 37) Competitors (Code 28) Prog & Proj Management (Code 11) Total Care (Code 32) Industrialisation to support growth (Code 50) Comms (Code 24) Stakeholders Mgmt (Code 31)+ Difference in Perspectives (Code 19) Product issues (Code 43) + Short/Long term thinking (Code 6) <p>Cat 8 – Resource & risk – Incorporates comments on:</p> <ul style="list-style-type: none"> Management of risks (Code21) <p>Cat 10 – Finance -Incorporates comments on:</p> <ul style="list-style-type: none"> External vs Internal financial pressure (Code 25) Costs issues (Code 20) Revenue Issues (Code 44) Customer vs commercial challenges (Code 52) 	<p>Cat 6 – Infrastructure Incorporates comments on:</p> <ul style="list-style-type: none"> Scalability (Code 49) <p>Cat 5 – Business Model – Incorporates comments on:</p> <ul style="list-style-type: none"> Business Plan (Code 15) Focus of Business (Code 51) <p>Cat 8 – Resources & Risk - corporates comments on:</p> <ul style="list-style-type: none"> Talent loss through redundancies (Code 30) Headcount constraint issues (Code 14) <p>Cat 1 – Identity - incorporates comments on:</p> <ul style="list-style-type: none"> Mindsets (Code 2)

Figure 5-1. Categorisation or organisational tensions (Adapted from Smith and Lewis,2011, p. 383)

These categories are a consolidation of the challenges identified through the discursive analysis of participants' comments and juxtapositioned within an organisational tensions framework to provide a novel, comprehensive and holistic interpretation of the challenges facing the case study organisation.

This model broadens Smith and Lewis (2011) model to incorporate empirical evidence from a servitization perspective. This schema addresses the first part of this study's research question:

“How does the intra-organisational structural challenges of an established servitization organisation compare with those of firms undergoing initial servitization transition...”

The findings in this chapter endeavour to not only “conceptualise how [the] substantive codes are related, but also move [the] analytical story in a theoretical direction” (Charmaz, 2006, p. 63). It begins to address the research question through analytical theorising grounded in data enabling a more critical and reflexive analysis, ensuring not only a greater clarification in which to understand the research question but also offers a roadmap for presentation of the findings.

However, this model does not seek to present an exhaustive list of challenges derived from each theme or data type, as the nature of theoretical positioning problematises that such clarity cannot ever be truly recognised by a researcher. Instead, presented are those elements within the nominated themes and constructed categories selected by the researcher that support the analysis of the case study findings through the explanatory and illustrative nature of participants’ observations and comments across the various themes. As such this chapter uses illustrative quotes to form the backbone of its supportive data.

The structure for the rest of this chapter is as follows. The first sections (section 5.1 to section 5.5) will explore the challenges identified from the data analysis within the organisation framework themes of Learning, Belonging, Performing and Organising. Section 5.6 to section 5.11 will then look at the challenges presented under the combined themes of learning-belonging, learning-organising, belonging-performing, belonging-organising, learning-performing, and performing-organising. Section 5.12 will then present a summary and discussion of the finding in relation to addressing the first component of the research question.

5.1 LEARNING Challenges

From the initial transition of a product-centric manufacture to one that provides product-service offerings the differing strategic logics to be overcome, such as that of products verses services, i.e., confliction of G-DLogic and S-DLogic, are significant and arguably persistent (Gebauer, Fleisch and

Friedli, 2005; Kowalkowski, Gebauer and Oliva, 2017) and overcoming them represents a need for an evolution of organisational learning to cater for the significant changes both the meso-organisational level and micro -level in the required skill-sets of workers (Baines et al., 2013). Within the conceptual theme of learning, one can argue that different types of learning strategies need to be available to an organisation if it is to overcome these challenges.

The theme of learning can be generally thought of as those efforts required by an organisation to modify, renovate, change, and innovate products, processes, and proficiencies to offer relevant value propositions to customers (Smith and Lewis, 2017). Figure 5-1 shows how the integration of initial, focussed, and selective coding developed the conceptual categories of challenges that participants presented in their discourses and how such categories were integrated into the first of the main thematic headings, that of training. The supporting challenges behind the learning theme are discussed below.

5.2 Learning Challenge - Training

One of the key struggles for organisations is the issue of *"balancing homogeneity of knowledge and skills with flexibility and adaptability"* (Antonacopoulou, 2001, p.330). The duality is particularly prevalent during organisational change programmes where the temporal reference point of present verses future can be articulated as a need to *"build capabilities for the future, while ensuring success for the present"* (Smith and Lewis, 2011, p. 384). Such tensions can be related to the challenge of delivering both explorative and exploitative strategies, what March, (1991) and Levinthal and March (1993) referred to as *"the pursuit of new knowledge, of things that might come to be known"* and *"the use and development of things already known"* (ibid, p. 105).

Moreover, organisational learning can reveal competing demands between the need for training as a means of corporate improvement, and training and development for an individual's advantage. In the case of the latter, organisations often have a desire for the continual development of its management, but often only if the organisation will benefit from this process. This can often leave learning and training as something that has an initial priority, such as the basic requirement for entry into a

profession, as for example in this case study where there was a requirement for most engineers to either hold an engineering degree or have gone through an extensive engineering apprenticeship within the company. However, once staff were established in the organisation, the continuation of learning was often experiential in nature or non-existent, with the odd exception, as acknowledged by many participants, for example:

"yeah.... umm.... so, I am going to say I think we are a bit hit and miss on training! We tend to offer certain management training at various different levels ... I certainly find I can get extremely busy, but once in a while I get out of the business for a short length of time to think around the stuff and I think God yes.... I'm not doing enough of this, I'm not investing enough time on my own personal development, not for me, but what we can deliver for the company, so I think we are a bit hit and miss in there."

(Interviewee B4)

"Oh, I've never had any follow-up training...not since I first joined over 24 years ago! ..."

(Interviewee A5)

"...training is very sparse in {name of case study organisation}, I haven't been on a training course... umm... in a number of years, in fact I can't even remember the last time I went on one. It's when I was in my early career training (16 years ago) ... aside from that I've not been on any training programs".

(Interviewee E8)

In terms of training, the lack of continuing professional development whilst presented by some participants as not necessarily a major concern of the organisation; nevertheless, led to a discussion of a broader and concerning issue that of up-skilling employees, seen by some as a necessity to deal with the increasingly complex nature of PSS offerings:

"...I tend to find we are bringing on this next generation of employee and we are not actually doing them any form of service, we are not helping to train them, we are not developing them, we are not guiding them. We bring them in, we throw them into a role and say good luck, and often in a very senior role with very little experience of the company and they have no depth of background to operate from."

(Interviewee E17)

"I think it is a challenge that we have as a company to try and face... it's how do you get people up the learning curve quickly enough to be useful and be really doing the things that you want them to go and do in a world where there is a lot of knowledge that's required to do it".

(Interviewee B4)

Additionally, in-house learning, beyond that delivered as part of the transformation programme, was seen by many participants as one avenue to redress skills shortages, though presently limited in its scope and often relied on an individual seeking self-help solutions. Most participants therefore presented organisational training solely in terms of 'on the job' learning:

"...in terms of services training it's probably more in-house that we do, if any. But I would say we have a long way to go in that arena..."

(Interviewee A1)

"So, I don't think we are in a very formally trained environment and there isn't a manual to it as it were, so I think there is a bit of trial and error but there is a lot of experience here and in osmosis one gets knowledge and making some judgement calls and working it that way rather than any formal training."

(Interviewee B4)

From the point of view of an organisation that acknowledges the complexity and variety of its product-service offerings, this lack of organised training/learning and development could have unintended effects, for example, in stifling the organisation's ability to innovate in its service offerings or in its performance (Antonacopoulou, 2001). Organisational learning requires organisations to develop and adopt to new logics, none more so than for firms engaged in servitization (Ng *et al.*, 2012); who according to many scholars need to move away from a traditional goods dominant logic and adopt a more service dominant logic (Vargo and Lusch, 2004c, 2008b) necessitating employees to learn new customer focussed skills. In essence, moving from single-loop learning (i.e., doing things right) to double-loop learning (i.e., doing the right things) (Argyris and Schon, 1978; Cartwright, 2002).

Such a change in business learning is presented in much of the literature as a desiderata for firms to not only better manage long-term customer relationships, but embracing a customer -centric focus enables firms to better understand how value is perceived '*through the eyes of the customer*' (Brady,

Davies and Gann, 2005; Johnstone, Dainty and Wilkinson, 2009). Such a perspective was described by one interviewee thus:

"a key skill that I think we need to bring in ... as you said the skill sets that can understand value creation and can help the business deliver value through the services side of things, aftermarket support if you like, customer support... those are the challenging skills we need to develop... where you can really differentiate yourself is how you market and support your customers. I think that is an area we need to develop, and that is much more about people skills than the more traditional engineering skills."

(Interviewee A1)

Another, though somewhat undesirable facet aligned to a lack of organisational learning is the possibility that the lack of opportunities for organisational learning could be construed as a surreptitious method of control (Lees, 1992). Although no one directly acknowledged such a method was in use; nevertheless, the complex nature of many of the product-service offerings was cited by some participants as a reason why internal candidates were better placed than external candidates for certain positions, propounding the view that any in-house training was easier to achieve with personnel already inculcated in the organisation's ways of workings:

"Umm... they are very bespoke skills... So, I could not recruit externally for that... I didn't recruit external for it, and I just replaced two of the team members internally for those roles. Somebody tried to get me to go externally but I said just no way, to do what we do you need to understand the business and how it works!"

(Interviewee E18)

Additionally, resource concerns were raised in respect to skill sets, questioning whether the skills required in the business today would be the same for tomorrow. Whilst many participants acknowledged the need for traditional engineering skills, some acknowledged that the complexity and integration of product-services now required the firm to develop employees with a more hybrid engineering-services portfolio of skills, seen as *sine qua non* for successful delivery of a servitization strategy in the future:

"We... the challenges we sometimes face from recruitment I think is people's perception that we are mechanical engineers, when in actual fact to create the product that we do and look after in-service requires multi-skilled disciplines... this is the future need, now!"

(Interviewee B7)

What can be contended from participants' discourse analysis is that the challenges of learning can be observed by the different irrationalities expressed by participants regarding the dichotomy between the capabilities needed to deliver explorative and exploitative action. Within this dichotomy, the potential for conflicting demands across the organisation in terms of external and internal training present a picture of organisational learning needs, which are at best vague, at worst not aligned to either the current or future needs of the business. Such conflicts can be best exemplified in the comments relating to participants views on the challenge that digitalisation brings to the organisation and discussed in the next sub-section below.

5.2.1 Learning challenges – Drive for growth (Digital)

Across the servitization literature there is a common understanding that a manufacturing organisation needs different operational capabilities to successfully transition to a product-service provider (Baines, Lightfoot and Smart, 2011; Gebauer, Paiola and Saccani, 2013; Baines and Lightfoot, 2013; and Story *et al.*, 2017), with the aim being these capabilities will offer customers added value.

One such emerging value-added capability discussed by participants was digital capabilities. Indeed, some scholars have gone as far as presenting '*the increasing use of digital technologies for connecting people, systems, companies, products and services*' (Hsu, 2007 cited in Coreynen, Matthyssens and Van Bockhaven, 2017, p. 44) as the next major step in adding value to customers.

However, whilst organisational life can be described as the duality of physical materiality and social worlds (Orlikowski and Scott, 2008), such sociomateriality can present challenges. For example, during the interviews there was an acknowledgement by some participants that whilst digitalisation was a capability that needed developing across the organisation; nevertheless, the disruption to the firm's established networks and interdependencies, the blurring of organisational boundaries, means its adoption within the company's business model could prove challenging, as the following quotes attest:

"Yeah, so I think you touched on... so, the biggest... well I don't know if it's the biggest but certainly a major area of focus and challenge will be the digital strategy. So, how the world will progress with sensors and information around how products and services are incorporated, implemented, utilised, and how we get the information back and use it to develop our business

and improve customer satisfaction. So, I think that is the area that is going to be challenging for us... I think that is one area that where we are going to have to really focus on and develop if we are to compete in the future..."

(Interviewee A1)

"That's an interesting question, and I will answer it very honestly in that I don't really understand what our digitalization business model will be; I don't think we understand the space!"

(Interviewee C28)

In general, participants noted such a capability had the potential to significantly improve performance and grow the reach of the company (Coreynen, Matthyssens and Van Bockhaven, 2017). However, some also acknowledged that investing in such a capability would require the organisation to reconfigure a variety of systems and processes if it was to fully embrace the potential of digitalisation. Whilst improvements, if made around business routines such as information flow on product utility, customer data and marketing, for example, have the potential to improve both decision-making and support the innovation of more advanced service portfolios (Ulaga and Reinartz, 2011); such improvements come at a cost, and concerns were expressed that the development of digital capabilities relies not only on information systems being integrated to capture relevant data, but also fundamentally required the organisation to:

"... become agile and nimble enough to meet these disruptors [technologies], this is one of our challenges".

(Interviewee B4)

Beyond the simple provision of digital infrastructure, concerns were also expressed over the lack of understanding within the business of how this capability would be configured and used, as well as its effect on future resourcing and extant structures. Moreover, some participants argued that personnel with digital skills are a scarce commodity already and in the future competition from other business sectors for this dynamic resource could result in these skills being even harder to obtain externally and that current internal resources will not be sufficient to meet future needs:

So, I think that is the area that is going to be challenging for us... we see our major competitor GE buy lots of digital companies, we tend not to do that, we tend to be more organic

growth...umm... and whilst we've got some very clever people on that side of the business, I think that is one area that where we are going to have to really focus on and develop if we are to compete in the future...and at the moment I have real concerns that we are not an attractive option.

(Interviewee A1)

This then raised the question once more on how to provision new skills, should one look for them externally or through in-house development. In terms of digitalisation, participants in general were unsure how the organisation would effectively leverage digital skills but recognised that in acquiring and retaining personnel with such skills the organisation would face a host of new structural challenges. These would range from the need to reconfigure current processes and ways of working through to possibly changing employment relations. The latter being a perception that the introduction of digitalisation within organisations often results in reduction of staff numbers and consequently higher unemployment (Brynjolfsson and McAfee, 2011), all of which are factors that will impact the organisation's culture:

"...digitalisation will require a different way of thinking from the way we are setup today, with packages having to be different that we would give those people from what we have today...So, digitisation! I am terrified Clive, terrified...they have absolutely no idea what big data is, and no idea where to collect it from, and no idea what to do with it! ... what's more the last thing we should be doing is employing someone from within [the case study organisation] to worry about big data, because we have no experience of that...So, we should be looking at Microsoft executives, or Apple executives, or Google executives, all whoever it is and paying them a handsome package to figure out what the hell we are doing! It is not about employing someone who is very good engineer, or is a very good commercial guy, or very good at marketing, and asking a leopard to change its spots to suddenly become a digital expert. Yet, for a lot of those within [name of case study organisation] that's what it feels we have done!

(Interviewee C12)

"...what you should really be worried about is the digitalisation of the future, and it actually requiring less and less people to do the jobs that you do today"

(Interviewee E17)

Furthermore, some participants were concerned that in the drive for digital competency the organisation was already behind in its preparedness and was only now playing catch up with competitors:

"... we really need to get a move on in the digital space ... some of our customers are miles ahead of where we are, and are at the point where we need to step up all our we are going to get dis-intermediated, which is not good ...to me, getting to grips with digital and really getting going with digital in anger is a big challenge, particularly in the aftermarket sector we will get disintermediated from some value we thought we were going to get so we need to move quickly in that Space".

(Interviewee E15)

"GE have literally spent hundreds of millions of dollars on Digital over the years. GE is no fool, they don't throw their money away, they don't just go and do something because it's a fad; they do it because they see value in it...whereas we are just starting to ask about it!"

(Interviewee E17)

Whilst there is abundant literature extolling the value of digital capabilities with some scholars seeing their development as *'going hand in hand with adopting a servitization strategy'* (Parida et al., 2015, p. 41); nevertheless, concerns were expressed over how slow the organisation had been to recognise the value of this dynamic capability and to the role it could or indeed would play in determining the future success of the business. Such concerns relating to digitalisation are not unfounded as technological change researchers, such as Mosakowski and Earley (2000) and Sastry and Sastry (1997), acknowledge that new technology has the potential to create discontinuous shocks within organisations.

Overall, the views captured a snapshot of opinions expressed by many participants' concerning the fundamental challenges the organisation would have to overcome if it was to effectively develop advanced digital capabilities. Highlighting, for many, management's unpreparedness for the impact digitalisation could have on the organisation in terms of its current culture, resources, and structural configuration.

5.2.2 Summary of Learning challenges

Learning challenges can be presented as the organisation's ability to frame new epistemic knowledge within its routines, practices, and structures to enable it to function as a going concern both today and tomorrow. Whilst many participants revealed a lack of CPD and acknowledged the need within the organisation for an appropriate hybrid of engineering and service skills, many however seemed trapped within a double-blind of how such up-skilling should be delivered: external or internally, with

some actors arguing that the complexity of the organisation's offerings and ways-of-working meant that recruiting personnel from 'outside' with the necessary skills was unrealistic and that in-house recruitment and training was presented as the better option, despite most participants acknowledging their own lack of further in-house or formal training opportunities. What can be appreciated from the participants' dialogues is the paradoxical relationship between training needs and learning opportunities and captures both the ambiguity of contemporary organisational life and how managers' cognition of their reality is shaped by organisational culture (Antonacopoulou, 2001).

Another key source of learning paradoxes can be seen in the tension between a struggle to meet the organisational needs of today versus the uncertain needs of tomorrow. In this study such a tension can be seen in the debate over the impact of digitalisation. Here a dichotomy of opinions was expressed regarding the impact this dynamic capability would have on the organisation as digitalisation moved from a future aspiration to a contemporary core capability. What the dialogues under the learning challenges depict is the simultaneity of tensions that inhibit and foster organisational learning, presenting interconnected and interrelated challenges across structural, processual, and cultural domains of the business revealing, despite Lewis' (2000) contention that learning often requires '*tearing down the old to build the new*' (p. 767), that in practice just how difficult that is to achieve.

5.3 ORGANISING Challenges

During the data gathering period of this research, the case study organisation was still adjusting to the effects of a strategic review led by its corporate headquarters, a review aimed at simplifying and restructuring its core business units from five down to three, as well as the commensurate restructuring of support and management functions, based around Civil Aerospace, Defence, and Power Systems (Case Study Press Brief, 17 January 2018).

Irrespective of the complexity innate in the strategic reorganisation of the business units and support activities, many scholars acknowledge that the case study organisation already was blessed with significant levels of complexity necessitated by requirements to deliver its variety of product-service offerings (see Heiko Gebauer, Edvardsson, Gustafsson and Witell, 2010; Story *et al.*, 2017). Such requirements had historically developed differently across a variety of organisational functions as a result of imitating the variety of conditions within their respective markets, but now were increasingly requiring the intra-organisational co-ordination of various different functions, structures, countries, regions and customers into an interdependent overarching organisational system (Jarzabkowski, Le and Van de Ven, 2013).

In this research the stratified cross-sectional views of key management captures and construes the polyphonic views of the organisation in regards the challenges management face in achieving such intra-organisational co-ordination and are captured under the challenge theme of Organising.

Organising challenges, in this study, specifically, relate to the case study organisation's complex needs in terms of the differing structures, processes, and behaviours necessary to support its servitization strategy. The descriptive account of the challenges presented are the result of capturing the rich insights from participants' discourse and distilling them down to the core foundational constructs underpinning the theme of organising and are presented under the headings of infrastructure, leadership behaviours, and resourcing.

However, prior to discussing these issues, it will be useful to understand the structure of the organisation, not as presented in any corporate organisation graph but rather as a semiotic

interpretation of how participants' perceived it. Such an interpretation is useful in that it helps situate the contextualised understanding of, and responses to, the challenges many participants' expressed in relation to their organisation which numerous participants referred to as a triangle or a three-leg stool structure:

"So, the service lines are part of a triangle, so your triangle has the projects at one tip, the service lines at the other tip and it has the regional teams at the other tip. That triangle is there to deliver everything we need to deliver from a technical product operational perspective to the customer, fronted through the regional team".

(Interviewee B2)

"...you have a triangle really, you have the Projects and the Head of Projects, who are very internally focused and have profit responsibility ...projects are the main product, service lines for service delivery into the regions, and regions into the customer.

(Interviewee B6)

Figure 5-2 is presented as a visual representation of the organisational structure derived from various conversations and is offered to help situate participants' comments on the challenges experienced under the thematic node of 'organising', challenges often resulting from complex systems constructing competing designs and processes (Smith and Lewis, 2011).

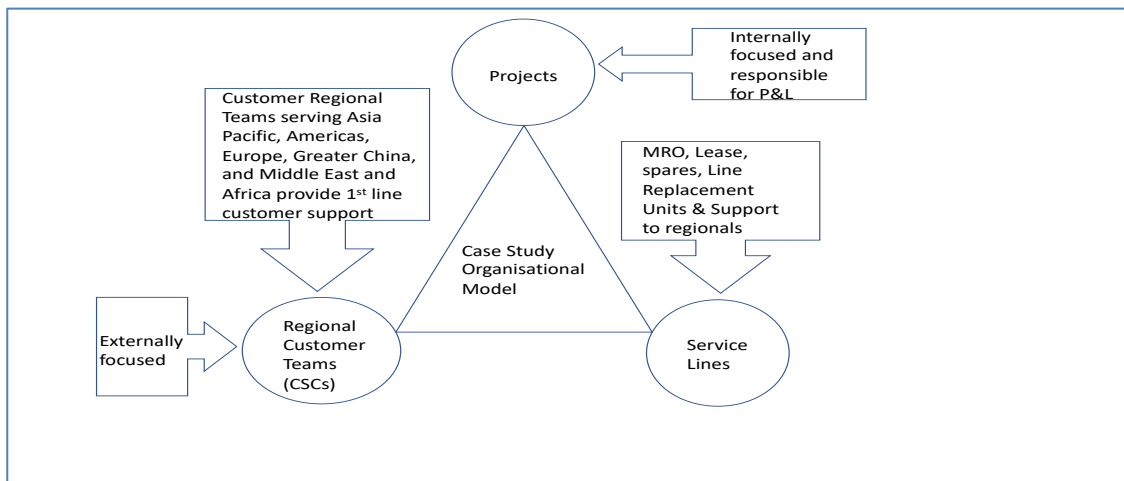


Figure 5-2. Conceptual model of case study organisation

5.3.1 Organising challenge - Infrastructure (CSCs)

The first of the sub-themes presented under 'Organising' concerns infrastructure, specifically that relating to the regional Customer Service Centres. These centres serve Asia Pacific, the Americas, Europe (Based in the Midlands), Greater China, and the Africa and the Middle East. A sixth known as the Lessors Team serves the needs of leasing company customers across the world (Company Press Release 3 February 2015). The aim of the service centres is improved responsiveness by being closer to customers and doing more of the work in the regions where they operate.

Within the servitization literature a key component sighted for the successful delivery of an advanced service model rests with the OEM/ or its associate's ability to deliver agreed services at the point where the customer needs them (Story *et al.*, 2017). One of the specific challenges around infrastructure raised by the participants concerned the operation of the Regional Customer Teams, based in five Customer Service Centres (CSCs) around the world. The CSCs could be said to reflect the separation of the product design and delivery from that of the service delivery, in essence what Tushman and O'Reilly, (1996) and O'Reilly and Tushman (2013) describe as structural ambidexterity, where organisations seek to manage short-term efficiency and long-term growth by "*not only separate structural units for exploration and exploitation but also different competencies, systems, incentives, processes, and cultures—each internally aligned*" (O'Reilly and Tushman, 2008, p. 192). The first CSC to be fully operational is based in Singapore and has been presented by some as the organisation's preferred 'service model' that should be rolled out across the rest of the regions. However, such a view was not universally accepted and could indeed do the rest of the CSCs no favours:

'...very simplistically, the regionalisation model, the customer service model, that we have today is based on our experience in Singapore where we put a tremendous amount of support into Singapore, they love it by the way... it's a great model for them! But the honest answer is it is not scalable, we can't put that amount of resource into every region in the world, yet transformation is somewhat trying to replicate the Singapore model around the world...then guys you are replicating a model that you know from day one you cannot completely replicate...'

(Interviewee E17)

Whilst there was agreement that the CSCs allow the company to be closer to clients, thus in principle speed up response times to queries, there was nevertheless a sense that there remained challenges that were problematic for the organisation to be resolved:

"Well certainly at the project level you are acutely aware off potential problems at some regional centres.... umm.... I've had the advantage of not working only in this business; so, as a newbie coming from outside, I'd already dealt with regionalisation...however; 'Civil' is finding that very hard!....."

(Interviewee A5)

For example, a concern expressed by some participants related to the availability of a skilled local workforce in some of the regions:

"...in the Middle East and Africa as an example, it looks quite difficult to locally recruit, it will be easier once we've got a better base established there, and a better presence, I think; certainly, trying to recruit remotely, at the moment we are, we are not quite getting the people that we need and want".

(Interviewee B6)

Participants acknowledged that to address this skills-gap it could be necessary to relocate some staff from the UK, at least in the short to medium term, although such a move would not be without problems:

"People don't move out of Derby, but without them we are screwed! Generally, people don't want to move out of Derby, but we have got to try and get them into region..."

(Interviewee A10)

"So, if you can imagine many of the people are seconded to the Regions as opposed to having gone there permanently. So, I think that will be an issue that we are going to have to live with for... I don't know, maybe a decade or so...until we have really started to tap into the local way to hire, and the local expertise...hopefully!"

(Interviewee E24)

5.3.2 Organising challenge - Standardisation (CSCs)

Many participants expressed a concern that whilst moving closer to customers was generally a good idea in terms of responsiveness and line of sight; however, such a move held the potential for variation in service delivery. To mitigate such a risk some participants argued for the need for greater

standardisation across functions, and used the need for commonality of service across the CSCs as the evidence behind their position:

"...we are trying to standardise the way work actually gets completed ... and then make each Region to deliver to a standard."

(Interviewee A10)

"So, I go back to standardization ... so standardise, codify, it's doing the same thing every time... but today even if we wanted to simply move one person from service centre A to service centre B, we can't do that at the moment! ... as the process is different across regions ...so, we must really look at how we standardise and make things simple. The only way you can deliver services well and effectively, and on time, and consistently, especially across four different regions with multiple different customers is we need to have a very clear consistent way of managing that delivery".

(Interviewee B6)

However, as will be discussed later under the LEARNING Theme, the concept of increased standardisation may seem attractive, and a simple solution in principle, but some participants had yet to be convinced of the approach, arguing that rather than being a panacea for all the challenges facing CSCs, standardisation, in fact, could become a mechanism that restricts a customer facing team's ability to innovate to meet changing regional customer needs. In essence, defeating one of the stated main drivers of structural ambidexterity, that of each CSC having *"different competencies, systems, incentives, processes"* (O'Reilly and Tushman 2008, p. 192) to best reflect the different regional customer requirement, but internally aligned to ensure the effective delivery of service:

"It's an interesting dilemma because while I don't have a problem with [UK] per se, and I get the concept of standardising processes... it goes back to an earlier comment which is are you just trying to make the model work...So in many cases... yes you can go and standardise something, but you can end up building more silos, they all want the same, they are all very standard, they all operate same way but that is not Leaner!"

(Interviewee E17)

"...but that is the tension..... allowing them [CSCs] enough empowerment to feel that the customer feels that they are getting a responsive, agile service without creating a P&L exposure"

(Interviewee B7)

5.3.3 Organising Challenge – Power and Direction (Governance)

Another challenging area raised by participants regarded governance, both at the board level and across the organisational structure, citing the influence of what many viewed from a construed identity image as 'outsiders' and the effect they were having on the direction and control of the organisation. Participants had diverging views on the value of detached outsiders versus knowledgeable insiders on the business, particularly at the Strategic level (Sundaramurthy and Lewis, 2003).

There is clear evidence from many studies (for example see Hambrick and Mason, 1984; Smith *et al.*, 1994) that the impact such 'outside personalities' can have on a business is substantial, and largely relates to their decision-making in terms of current and future organisational outcomes. Indeed, in this study, some participants saw collaboration with 'outsiders' as a necessary evil if the organisation was too successful adapt to the environmental ambiguity it now found itself operating in:

"My personal view is that all these external people that we have had at the very senior levels, and on the board, all have got different views and different insights and they are all coming in to try and break the culture that dominant logic that [name of organisation] has got, which we ultimately need to change if we are to go and be successful... and I think the fact he has brought a new team in at that executive leadership level is going to bring a breath of fresh air to the organisation.... and it needs it! We need that new thinking to come into the organisation and I see some of the signs in things that are happening."

(Interviewee E26)

But for others, concerns over 'outsiders' influence focussed on their perceived cognitive bias and lack of requisite understanding of the business they were now making decisions about. Thus, some saw the dualistic tension of 'outsiders' verses 'insiders' as more a confusing battle for direction and control of the business rather than one of collaboration:

"The problem you have now got with all the people at the top is that they come from different organisations and don't necessarily know much about the aerospace industry, or marine, or defence or whatever industry they are heading up, and they all have different ideas and are pushing their own agendas and are running them as different separate businesses now...we have had a long period of continuity in the executive team. Well, now it's all new guys! You know, the top team has very few [name of case study organisation] people that have been here any length of time. The top few roles, there is nothing, you know, they haven't even got two years' worth of experience between them, so what is going to happen is that they will want to

go and make their changes and it will be binary! It will either happen, and we will all fall in love with their way of working or the machine will fight against it, and they will go! and we'll have another guy or lady or whoever, who will come in and start the process all over again!"

(Interviewee E26)

"... when we have had the level of leadership change that we have had in the organisation in recent years with [CEO], and a lot of first line members that [He] has brought in, and for good reason, but that means that they have different priorities, different things that they want to drive and believe are important from an organisation perspective, and that has a huge kind of butterfly effect on the rest of the business in terms of we were going in one direction, and now we are kind of moving in another direction!"

(Interviewee E23)

However, concerns were not just centred about the dichotomy between 'outsiders' or 'insiders' organisational stewardship, but given the globalised nature of the organisation's operations, views were expressed about the lack of diversity within the organisation's hierarchy:

"You look at the leadership team and the level of diversity in it, it's hard to think of any other company on the scale and size of us that is still dominated by white, middle aged males, who come from the same part of the world! And so, our ability to think differently, be agile, is severely limited' that is one of the challenges we have got!"

(Interviewee E26)

The question of diversity is examined in greater depth later in this thesis under the theme BELONGING.

5.3.4 Organising Challenge - Command & Control verses empowerment

Away from the board, views were also expressed around the challenges many perceived as a dichotomy of managing the levels of control: ensuring safety and risk are managed yet allowing staff the necessary empowerment and autonomy to operate and resolve issues quickly. During this study the organisation was undergoing a transformational change programme, which had resulted in over 40% of middle and senior management made redundant. Such loss of staffs had a considerable impact on organisational structures of authority and ways of working, which some participants saw as the catalyst for promoting greater empowerment and autonomy. Again, views were split, for some this was happening:

"...it has certainly changed since I have been here in terms of giving people more accountability. I mean you generally just get on and do what you need to do, you know what you've got to do, and you just go and do it!"

(Interviewee C29)

Yet, for others progress was too slow, with challenges around control/empowerment remaining problematic and frustrating:

"So, I think if my boss entrusts me with £1.2 Billion pounds worth of [company] business, a handful of factories, and 1600 people; why do five people have to sign the contract that I have just initiated? When four of them haven't a clue what my business does! £1.2 Billion is a pretty good sum, I think JCB is only £3Billion you know, so it's a medium-size company, why all the governance? Why? It's re-work, it's waste! So, I would take that away, and I think we would be set free... If you gave the businesses more autonomy to be able to do what they need to do, and the functions provide the support I think that would be much better to do business."

(Interviewee C12)

"But how do you separate absolute confidence you want in safety verses the ability of people to be more agile, to take decisions. Now some decisions will be the wrong ones, but hopefully that will allow us to learn and move forward and give us a level of pace in the organisation, but we still struggle to work out what the boundaries are with that!"

(Interviewee E26)

The challenge between the need for management control and the need for greater empowerment of leaders and employees alike has been well documented (see Lee and Edmondson, 2017; Lewis, Brown and Sutton, 2019) and within a manufacturing company can be a crucial capability for operating in ambiguous and competitive market environments (Teece, 2006). However, greater empowerment can be a diametric challenge for organisations, in that any '*increase in autonomy by employees requires a trade-off in management control*' (Lewis, Brown and Sutton, 2019, p. 483), a dilemma acknowledged by many participants in respect of trading-off release of control from the centre (UK) to Regional CSCs:

"The difficulties Projects have is they used to have far more control but as the Regional Services Centres have stood up and we changed the operating model for service lines we have had to allow (Laughter) more responsibility to go to a Region, for example, and that has been very, very difficult!... We used to run everything out of Derby, so everything of course was in the project, we instructed things to be done, and we could command and control the things that

were done. We now have to operate within the licence of 'this is the plan; we are trusting you to do it, and you need to come back to us if these three things vary'"

(Interviewee A10)

"... [discussion on regions] I would look at their leadership and say, "guys this central command and control will not work, we know it won't work and you are getting yourselves into businesses that you do not understand", and of course they ignored me! ... So, I would say the central command and control model does not work, and why would you not do something kind of like Coca-Cola that says... yeah there is the basic recipe that we're going to follow but we're going to tailor it slightly to meet different regions of the world because let's be honest different regions are different, they have different roles and requirements, different customs, communication, etc."

(Interviewee E17)

Much of the servitization literature identifies the need for an empowered workforce (van Baarle et al., 2021; Dubruc, Peillon and Farah, 2014; Gebauer et al., 2010) but rather like paradox discussions on establishing clarity of definition (Smith and Lewis, 2011), recently scholars have also sought to imbue the term empowerment with greater clarity (Lewis, Brown and Sutton, 2019; Seibert, Wang and Courtright, 2011; Spreitzer, 2008). As a result, Lewis, Brown, and Sutton (2019) proposed that empowerment could be viewed from two dimensions; "*structural empowerment*" and "*psychological empowerment*" (ibid, 2019, p. 484). An explanation of these terms is below.

5.3.4.1 Structural empowerment

Structural empowerment is when an organisation grants individuals the power of decision-making authority through decentralised command and control thus allowing employees a greater exercise of discretion (Conger and Kanungo, 1988; Mills and Ungson, 2003) and is thus seen as authority that is frequently embedded within the structure of an organisation (Lewis, Brown and Sutton, 2019) and maintained through the deployment of various management control systems.

Such empowerment can often be seen in the "*extent to which employees in their roles and responsibilities are subjected to formalisation and centralisation*" (ibid, 2019, p. 486) with the use of management reporting systems as a means of maintaining performance outputs and establishing regulatory limitations.

5.3.4.2 Psychological empowerment

Psychological empowerment, on the other hand, reflects how the individual perceives the experience (Conger and Kanungo, 1988; Spreitzer, 2008). In this study, the interview transcripts present a view of how participants perceive the concept of empowerment through their socially constructed reflections and understandings, which are intimately related to the theme of Organising.

In the analysis of the relationship participants had with the psychological perception of empowerment, many still considered the organisation as one predominantly distinguished by a command-and-control management style:

"The organisation, to me, is still a hierarchical and command and control led organisation, and that is why unfortunately when you asked other senior leaders who was responsible for addressing the concerns, they've raised in the interviews very few of them recognised that as senior leaders it was their responsibility..."

(Interviewee B27)

"I still don't think it's perfect. So, it's... we talk about it, and we talk about culture but there is still a lot of our culture that hasn't moved away from direct command and control. Perhaps... perhaps through the longevity of the individuals who hang around?"

(Interviewee C2)

However, there was also, for some, confident signs that the organisation was changing; however, this was tempered by a belief in some quarters that empowerment had unfortunately somehow bestowed everyone with decision-making rights:

"I think [name of the case study organisation] can be a pretty frustrating place at times because there are so many people who think they have now got decision rights, and they haven't got decision rights. So you make a decision in a meeting and low and behold two weeks later you find out people are still working on stuff, and you thought you'd said we are done with that, move on!... through that era of which there are many in the company, there is still that fear that exists".

(Interviewee E15)

"However, in [name of organisation] we have far too much of everyone still thinking they have a vote on a decision! So that makes moving forward really difficult. I also think that whilst it is good to have a consensus of opinion, I don't think we are what am I trying to say? In a model say as I imagine in the military, there is a command given, and a chain of command makes it

happen! ... A phrase I hear a lot is "who thinks they have got their hand on the tiller? Who is allowed to touch the tiller? And I feel sometimes there is...this just multiplies the problem down the organisation where you end up with almost in-fighting sometimes because people will say "we have control of this" and others will say," no that decision is ours!" so none of this is value added to the shareholder or the customer! So, it is frustrating!"

(Interviewee E21)

5.3.5 Organising challenge - Leadership style

Whilst an objective desire within the organisation may have been one of advocating more autonomy/empowerment to personnel, such an outcome was frequently conceptualised by participants more in terms of the leadership styles on display either supporting such a goal or not. What became clear from the analysis of participants' comments was that some leaders were more comfortable with the concept than others and that within the organisation there was a significant debate unfolding over those historically brought up with a command-and-control style of leadership and relatively newer employees seeking a more empowered and collaborative environment.

However, despite this dichotomy, in general, participants acknowledged that if the organisation was to operate effectively and efficiently in the 21st century a change in leadership styles was desirable, if problematic:

"One of the challenges we have got is leadership style within the business and culture. We are kind of moving from one that was an old dictatorial, autocratic, culture to a newer leadership style, coaching, engaging, delegating down, and that is a bit of a paradox! You know, however I put it, some of the more mature, older leaders see that that kind of leadership as a bit weird, it is not what they are used to ... like so many businesses probably having to deal with the paradox of a new style of management which is coming in and that doesn't fit with older managers..... that transition is quite difficult for some."

(Interviewee A1)

"We have certainly had a change in... umm.....at an extremely high level in the company, we had a change away from a very command and control type of leadership to... (pause)...moving towards a (laughter)..in [name of case study organisation] nothing moves fast...but moving towards an empowered distributed model."

(Interviewee A5)

Although once again one's role and location within the organisation appeared to operate as a mediator on whether participants believed the organisation had moved away from the old command and control leadership model:

"I liked being in environments where I was empowered, you know, to the point where I had power of attorney to sign contracts in my previous job. But here 20 people have to sign them! You know, we sometimes feel we are all signing ... a bit of safety in numbers... but it doesn't add much value, does it? and it still smacks of a command-and-control style of bureaucracy"

(Interviewee C12)

"Umm... I think the desire for autonomy is increasing but I couldn't tell you whether that is my journey, or the roles I have had, or the changing of the company at the same time, if that makes sense... I probably feel I have a greater degree of autonomy now than I ever have in terms of decisions for the product, decisions for the programme, within my accountability... but, I don't think I would feel the same necessarily in all roles, so like roles I may be qualified to do in five years' time it may just be I'm comfortable making decisions in this role. Also, because it is not the 'shiny new toys' there is not the same focus and attention, steering and command and control, we are a little bit out to the side."

(Interviewee D22)

Whilst the transformational change the organisation was currently undergoing was viewed by some as an opportunity for leaders to demonstrate a more strategic outlook in their areas of work:

"I'm sure and that alongside the transformational stuff I think the very top management is trying to change the organisational culture, trying to get us to think more about improvements and innovation, and not be quite so set in our ways."

(Interviewee E20)

To many others, the lack of visionary and discernible leadership, together with the 'thought leadership' necessary to drive improvements and develop the business, was viewed as more problematic:

"But the reason I still talk about the lack of vision for the future is because in many cases intellectually we get it and understand the need to be bold ... it is just when it comes down to day-to-day tasks our actions speak louder than our words. How much time do we genuinely spend working out how to, as I said before, be the disruptor, evolve our services in a way that would be completely disarming to our competitors? I don't think it is that much, and I certainly think that we should do more, we should more at the senior level, and I think there should be more evidence to show we are spending more time doing that!"

(Interviewee B9)

"If you were to go to our senior staff and say clearly articulate and draw out for me your vision of how these things evolves over the next couple of years, most of them actually couldn't do it because they don't really know! The feeling one gets is that we are somewhat making this up as we go, figuring out along the way."

(Interviewee E17)

Transformation here is faceless! There is no personality that is driving it that I can see, nor indeed can any of my colleagues, you know... it has almost become process... it is an activity... but who is that person who everybody loves, who is standing up and believing in this?... but it is more about the fact that there is just not any visible leadership from the Exec team ..."

(Interviewee E23)

5.3.6 Organising challenge - Decision-making

The primary responses concerning the challenges around decision-making centred on cognitive limitations, and what could be described as the struggle between rationality and bounded rationality. Often decision-making processes are presented as boundedly rational (Eisenhardt and Zbaracki, 1992), where leaders seek to improve the process of decision-making through the collection of more data and consultative discourses as a means of reducing risk and ensuring buy-in for a decision by as many people as possible. Such a view was extolled by some participants as still the prime methodology for decision-making within the business:

So, for me to take a decision I typically look down to get information and guidance, so the risk I am taking in a decision I will say show me X, Y and Z and that information comes from people below anyway! You have just got less people involved in what that is now! So, I wouldn't have thought there would be a bigger risk necessarily, because it is still the same people below that are generating the information, are using the data systems and telling me what the information is, there is probably just less people I have got to go through to get that decision.

(Interviewee E18)

So, there is a high degree of "we need to ensure that everyone buys into this" and "this is absolutely the right decision" the problem we have got is that in the past that has polluted a number of other decision-making processes in that decisions were made by committee... umm... people don't feel empowered to be that one person to take that decision without going and consulting and asking 10 other people before they do that!....umm... and because a lot of people have come from our engineering organisation into a more senior role in the

organisation, in the past that has kind of polluted the way we operate and become part of our culture. Now the challenge is how do you break out of that...."

(Interviewee A1)

Indeed, a few even expressed a view that perhaps the organisational bias towards procuring quantitative data for the purpose of decision-making was historical in nature, a legacy of its OEM past and its dominant workforce mindset (i.e., engineers). Whatever, the reason, the preference for quantitative data can be problematic, as its collection takes time, and decision-making is not exactly agile in the business, vividly described by one interviewee as glacial:

"Well decision-making here is glacial for a start...everything takes time, data collection, conversations, meetings...no one seems able to just ...make a decision and stick with it!"

(Interviewee E14)

This desire for quantitative data to support decision-making supports this researcher's assessment that within the organisation, many senior managers, still exhibit the characteristics of an 'engineering mindset' when it comes to the collection and type of data, they need to make decisions. Which as one interviewee explained can be problematic:

"But when it comes to making a hard decision, [many senior management] still feel very nervous without the quantitative evidence for it. So, there is certainly a lack of the visionary leadership, of course some leaders are better at it than others... so, there is balance in all this and I think that is where we struggle, and you do get that a lot of people in senior roles who have had that engineering heritage and background and it is kind of trying to separate out the engineering processes and the requirements around them verses business decision-making processes."

(Interviewee B9)

Within businesses tensions within '*Organising surface as complex systems create competing systems and processes*' (Smith and Lewis, 2011, pp. 383-384). In the dialogic analysis of participants' views such a competing tension could be discerned in the sense of frustration resulting from the data driven logic extolled by a manufacturing mindset competing against a more fluid customer mindset by service personnel, specifically around response times to customer queries:

"We are great at sitting in a room and go we must make a decision for this customer urgently... we are all agreed yeah agreed!... and we will walk out, and nothing will change... people in the factory or the customer team will carry on doing what they have always done! We end up with the debate starting after the decision type mentality! You can be the most powerful leader, make a decision, and the organisation will not change!"

(Interviewee E26)

Moreover, such data driven decision-making does guarantee a sureness in the execution of decisions, adding to the frustration:

"for example... in terms of the leadership I think for me [name of engine], our flagship engine, is proving such a troublesome child at the minute and could be reputational very, very awkward. So, I am very disappointed in that, so frustrated on the lack of availability in overhaul space, that resources were not right sized, incredibly frustrated that surely someone should have seen that coming, frustrated that we cannot get spare parts in time to manage some of these overhauls, surely that was priority number one over several years how is it that we missed that!"

(Interviewee C28)

One informant arguably went further on the question of decision-making within the organisation and raised the question of whether the traditional cognitive rationality of the organisation amounting to a 'win-lose' mentality was indeed suitable for delivering future business success. Arguably the traditional competitive paradigm supports the view of inter-firm competition, but with traditional stable markets now becoming more competitive firms have had to adopt aggressive competitive behaviours in order to survive (Luo, 2007). During this research such an aggressive strategy was acknowledged by numerous participants in the organisation's stated drive for 'growth' (the difficulties around the challenges of delivering a growth strategy are discussed later under the theme of 'performing').

However, adopting an aggressive growth strategy can instil within a business a certain organisational mindset, identified by some participants as that of 'win-lose' mentality. Whilst it is clear that the case study organisation has sought to strengthen its competitive advantage through the formation of strategic alliances to access rare and complementary skills and resources, such as overseas maintenance facilities and skilled engineers; nevertheless, recent studies suggest that firms may now need to bridge the duality of competitive and cooperation strategies of yesteryear to one of co-opetition

(Nalebuff and Brandenburger, 1996), moving away from a "win-lose" to a more 'win-win' mentality, a move some participants believed the organisation understood and was beginning to make:

"Another problem, if you like, that we have always had, is like a 'win-lose' mindset! So, it is all right if [we] win as long as somebody else is losing. But particularly as you move forward and the world is moving ... you have very much got to be a 'win-win' mindset, so it's okay if I win that it's alright if you do as well. We are slightly changing and heading towards that journey which is good and that will allow us to make decisions that we had not necessarily made in the past, which will be a positive."

(Interviewee E15)

5.3.7 Organising challenge - Trust

The Trust challenges here are contextually situated within the transformational changes taking place across the organisation and its delivery, a corollary to organisational leadership styles and management behaviours. For many participants the need for a change in what they perceived as a directed and somewhat macho form of leadership had been a long time coming:

"And I think the kind of culture has changed significantly since I have been here, you know, there was the level of, you know, your leader would get you in his office and he would tell you what to do, and you would go out, salute, and say yes, I will go and do that!"

(Interviewee E26)

"So, you know, if you had asked me one year in, I would probably have said to you ... asking for help and may well have been perceived as a weakness! umm... I think more recently asking for help... there is a little bit more of it, but not everybody is doing it! So, we have gone from zero to... you know on the scale from one to 10, we've gone from zero to four..."

(Interviewee C12)

"In the 'old days' asking for help was seen as a sign of weakness... a sign of weakness... yeah! That is changing, but there is still that kind of... well certainly for people who have lived through that era of which there are many in the company, there is still that fear that exists".

(Interviewee D22)

However, for others the organisational changes currently underway at the firm was, at the individual level, not just taking them out of their comfort zone but appeared to be violating a psychological contract between participants and the business (Datta et al., 2010; De Meuse et al., 2004). The result

was some interviewees were now questioning many of their established beliefs and norms about the company; beliefs that had been developed over many years of service, supporting scholars who promote that change initiatives resulting in downsizing can have a suggestive impact on employees' trust in an organisation's motives (Appelbaum et al., 1997). Indeed, trust in an organisation's leadership can have a positive impact on an individual's trust in the organisation (Joseph and Winston, 2005), but the opposite can also be true. In a 2017 Employee Survey conducted across the case study organisation, 35% of employees said they felt that the leadership acted in ways inconsistent with the organisation's code of conduct, and more concerning perhaps was the fact that 38% of employees didn't feel safe enough to speak up when issues arose (Case Study organisation World, June 2017, Issue No 27).

Rousseau et al., (1998) when discussing the phenomenon of trust identified in terms of a ternary system: building, stability, and dissolution. The building and stability phases can be presented in this study as the *ab-initio* development between the individual and the organisation in terms of shared values and norms that become established and stabilised over time. All the participants (who had between them had a mean average of 20.5 years' service with the organisation) could be said to have a shared sense of identity and deep dependence with the organisation; a view which is explored further under the theme of 'Belonging'. The decline phase is often presented in literature as the result of either redundancies through downsizing or betrayal of previous organisational norms of behaviour (ibid, 1998) and in this study such a phase may be present considering participants' reflections on the organisation's latest large scale redundancy programme, which resulted in the loss of over 40% of middle and senior management.

From the participants' responses regarding the multiplicity of changes the organisation was undergoing there was a dichotomy of views, ranging from those supporting the change to others who were more cynical and could therefore be said to be moving into the dissolution phase of trust. Such a change in individual's attitudes can be discerned in the following snapshot of comments relating to how the recent downsizing was perceived:

"umm...I feel like I have this weird loyalty [to the organisation], I may be institutionalised after 19 years, but you kind of think they will look after me, I have always done my best for them, but what I saw happen to certain individuals and people during the redundancies really shock my confidence and my trust in the leadership... it was an individual feeling that and I imagine, indeed I know, there were other people who felt like that also."

(Interviewee E19)

[previous feeling towards the organisation] there was a huge amount of pride and you thought, yeah! I want to be part of that gang as it sounds really awesome! But after this transformation that has been really hard, it's been really, really hard... and again that becomes hard as you become upset with a faceless organisation ... and I am like just angry, frustrated and upset so he [Line manager] takes the brunt of my frustration, even though I know he is feeling exactly the same angst as me...

(Interviewee E23)

Whilst in any organisation there are coalitions who have competing interest, it is anticipated that such coalitions will come together for the benefit of delivering the organisation's outputs. However, when questions of loyalty and trust manifest, the conflict can fracture any coalition and become challenging for senior management to uphold, and for others to understand:

"I have some good supporters at the top of the company that are there and going 'yep! we are going to support you, but then there are also some very senior people who are like not in that camp! and that can be very draining and hard to manage! "

(Interviewee E19)

"Do I think senior management is listening?... (laughter) my completely unfiltered reaction is... No, they are not! I don't say that with any pride at all, I say that with great trepidation because I do care deeply about this company..."

(Interviewee E17)

5.4 PERFORMING Challenges

The theme of performing challenges centres on the external and internal competing demands of various stakeholders, which are often pluralistic and conflicting (Smith and Lewis, 2011).

Within this case study investigation, the issues around performing challenges were concentrated around the organisational drive for growth and the speed in which this drive was being undertaken. From the analysis of participants discourse the issues were specifically concentrated around ramp-up for the growth drive and its speed, changing customer expectations, the confliction of perceived stakeholder motives, the financial concerns, and the means of performance reporting across the organisation. These themes are explored further in the following sub-sub-paragraphs.

5.4.1 Performing Challenge - Growth: Engine ramp-up Issues (Product Growth)

In the UK, the government considers the aerospace industry not only a success story but one that offers tremendous opportunities for growth. With their [Reach for the skies: a Strategic Vision for UK Aerospace](#) document citing the sector as providing a revenue of £24.2 billion in 2011 with over 75% of its demand coming from exports raising to £35 billion in 2020 ([Aerospace Section Deal](#)). Indeed, in 2019 Deloitte Consultancy (Lineberger, 2019) supported this optimism by highlighting the continued growth trajectory of the aerospace sector, driven by growth in commercial aircraft production. Such growth forecasts were seen as opportunities to which the case study organisation needed to maximise.

However, business growth is not just focussed on product growth but also, perhaps on a more important strategic concern, that of services growth, for as Galbraith (2002) noted if growth goals are what an organisation is after then product and service teams need to win business. Nevertheless, whilst the aspiration for business growth was one that was to be applauded, the challenges of delivering it were not lost on those responsible for its execution, as the following snapshots can attest:

"Umm... Dealing with the growth! This is our biggest problem at the moment... The ramp up on what we have to get produced to get installed engines into the fleet is unprecedented!"

(Interviewee A5)

"Yeah! ... so, I think, I think we have a lot (laughter)... I think our first biggest challenge is growth. Growth is so huge that we are having to build and deliver so much more and we're having to manage pretty much exponential growth..."

(Interviewee B6)

"Major challenges... umm... I would say probably one of the biggest ones is coping with growth."

(Interviewee C2)

"... so, in terms of civil aerospace the biggest challenges today... well we are still in the process of coming through a huge growth period..."

(Interviewee E20)

However, it was also clear during the numerous discourses between participants' and researcher that many now saw the organisation as a major player in the aeroengine market competing for the preferred supplier of aeroengines to aircraft manufacturers, which whilst challenging was a critical part of the organisation's business strategy to ensure future revenue and survivability:

"We've been hugely successful I think as a business, if I do go back to 20 years ago and look at the market share we had, particularly around the large engines market which civil aerospace is just over 50% of the business today, and large engines is probably about 2/3rds if not slightly bigger of that in terms of its financial contribution... umm... we had a relatively small market share, it's probably a single digit percentage... erm... now we know from the orders we have won that we will become greater than the 50% market share in civil large engines business. That is a huge achievement and it's very much standing on the shoulders of and in strategies and decisions that were made 20 years ago if you like, in terms of the [name of aeroengine] family and others in that kind of space."

(Interviewee C2)

So, umm... growth has been enormous, we are all over the world now and we offer something very, very different in what we offer today. And we are not the third player who is down here.... we are very much one of the leading two in our long and prolonged fight with one of the biggest companies in the world... we are miles bigger than we used to be, there is miles more things going on and yes there are miles more challenges, but I prefer to be in a Company facing the challenges around growth than in a company where we didn't have a lot on our plate."

(Interviewee B4)

However, growth brought with it emerging organisational challenges between the desire for growth through intense investment in new civil aerospace engine programmes and the reality of NPI delivery: challenges ranging from how to project managing a large number of NPIs whilst also scheduling time and resources; managing unexpected product maturity failures in extant engines; the speed of NPI projects through to issues emerging over managing cost lines:

'You have got seven development programmes all being done at the same time, which is unprecedented, I have never experienced that, and unfortunately some are late and concertina into each other now, so it is challenging...our problem is we have got to find some head space...but at the moment we have growth and product maturity issues. So, you know, we are having to deal with the growth and 'additional requirements' as the product isn't quite behaving itself... so, the ramp up on what we must get produced to get installed engines into the fleet is unprecedented!... and those growing pains of being able to produce enough parts at the rate required to build the engines, and to produce enough parts to service the aftermarket, that is causing us a lot, a lot of tensions!'

(Interviewee A5)

'umm... the real challenge in the business at the moment is how do you deliver the cost line in the business.... umm... and that can be the cost of the product, but equally it can be the cost of the people and the infrastructure that is required in order to service that increase.'

(Interviewee C2)

5.4.2 Performing Challenge - Growth: Customer expectations (Services Growth)

The aerospace engine market despite being an oligopoly in terms of aeroengine OEMs, has become more competitive due to the increase focus by OEMs on the servicing of their products as a means of not only securing lifecycle economic returns above the traditional sale of the product but also to capture market share (Kerr and Ivey, 2001).

This focus on service offers OEMs an opportunity to strategically align themselves with their customers. Such alignment enables OEMs to exploit their greater closeness to customers to gain valuable client insights that can be used to develop or enhance service offerings and capture a greater market share (Lightfoot and Gebauer, 2011; Salonen, Saglam and Hacklin, 2017). Such customer relationship development is consistent with aeroengine OEMs recognising that the overhaul and maintenance side

of the business (O&M) offers considerable opportunity to boost revenues, through enhanced customer relationships developed, often in excess of 20 years. It is about moving away from traditional MRO services, such as the 'time and material model' with high mark-ups for spare parts (Johnstone, Dainty and Wilkinson, 2009) to arrangements characterised more by the customer paying to use the asset and the manufacturer providing availability of the asset via power by the hour service level agreements, such as 'TotalCare'.

As such a key criterion of servitization success is the need for strong customer centricity (Baines et al., 2010). In essence, servitization sees value in the shift from competing through products to competing through services recognising that the relationship between the provider and consumer becomes critically intertwined. In this study the organisation has been in the business of product-service integration for over 30 years and touted by many scholars and business leaders as an exemplar of the phenomenon.

Whilst there is little doubt as to the veracity of these opinions seen by the countless case studies extolling the case study organisation (for example Ng, 2012; Smith 2013), there is nevertheless the potential of an 'Icarus paradox' (Miller, 1993; Wright, 2015) developing as many participants recognised that past performance was no guarantee of continuing success. Indeed, today, the market environment in which the case study organisation operates is very different from that of its past, one that now sees the hegemonic dominance of traditional airline customers being challenged by new 'pop-up airlines' resulting a new plurality of customer with often divergent demands:

'In the past the customers we used to deal with were full service legacy airlines, they had big engineering teams and did their own maintenance, lots of stuff and there are still some of them around, but there are equally airlines which have just appeared out of nowhere ... and they have just a front office, they sell tickets for flights and workout which routes to go and they've got other people providing services... So, I think that there is a universal tension because some customers as I say don't want to do anything, they want us to do it all, whilst other customers are saying... "No! I do this and I don't want you doing this all...'

(Interviewee B4)

'Umm...that's a good one! Umm...let me try and get my thoughts together...umm... we are not used to having competitors that just pop up! We just didn't see it previously, so I think that is a new phenomenon for us and certainly that is something in civil aerospace that is quite new to us, and I don't yet think we are all... our instincts are not honed yet in how we deal with that! So, from where I'm working... it's just the sheer growth in the number of customers.'

(Interviewee B4)

Moreover, traditional large carriers who previously were happy to accept fixed, long-term contracts were now challenging the established protocols and processes, flexing their economic muscle looking for more, but eager to pay less:

'There are some customers who can dominate, and I imagine the top, I don't know say 20% of customers probably take 80% of management's attention; but that is partly because they demand it, partly because they bought maybe \$5 or \$10 million of orders, huge orders, and they are huge drivers in our business, and they are, yes! demanding change, instigating change across our variety of areas, topics, and they are highly demanding customers as well...always looking for more but pay less...'

(Interviewee B27)

However, the drive for growth had not only brought in new customers, but customers operating to a totally different business model to traditional large carriers, with the added complexity of often operating in challenging locations previously not covered by the case study organisation. Indeed, many of the new carriers in the 'frontier markets' were often not even aware of the case study organisation's modus operandi, which has resulted in additional complexity to the organisation's operations:

'...due to the restructuring, I now have taken on more of the frontier markets which is just very, very time-consuming trying to even understand how to do business in these places. It is very complicated ... there is nothing in place, there is no infrastructure, it's unstable, they are not used to our processes, they don't understand our products, they don't understand how services work...'

(Interviewee C29)

'Africa is huge, we have won business north, south, east and west. Some of them are quite small airlines and in any priority setting here [Derby], they are ranked relatively lowly, but for them as a small airline having put their trust in [us] we are absolutely critical to them achieving what they have committed. So, there is perhaps the biggest paradox... that the smallest customers are the most reliant because "they bought [name of case study organisation] on the basis that

[they] will see us right" ... but it goes back to the point I made earlier the demands of these guys are disproportionately high on us compared to say the biggest more established ones.'

(Interviewee C28)

Consequently, the organisation's drive for growth has challenged the perspective of many senior manager's focussing their attention on how they can better anticipate both traditional and new customer business needs, which has required the organisation to develop better, more agile, customer relationship management capabilities as a means of gaining an intimate understanding of customer specific requirements (Raja, Frandsen and Mouritsen, 2017; Story *et al.*, 2017). A point conceded in the following dialogic:

'... absolutely...we need to delve into all areas of their business quite frankly! I mean that it is where it gets to you, so you are moving from being a supplier to being a partner! ... so, our Futures Programmes Director tries to anticipate new aeroplane architectures, what they might look like, what kind of technologies and Engine architectures we might need...'

(Interviewee A1)

Clearly, manufacturers who can tailor products and services to customer needs not only have the opportunity to achieve competitive differentiation by offering a product-service mix that competitors cannot match (Vandermerewe and Rada, 1998), but also it offers firms a greater opportunity of achieving higher levels of customer satisfaction (Raja, Frandsen and Mouritsen, 2017). As one would expect from a company that had been delivering an integrated product and services offering for many decades a customer satisfaction monitoring system was in place, and to some interviewees working well:

'...the biggest thing we monitor is customer satisfaction as well as how the engines are actually performing...so, we ask our customers... we have a customer team that tracks and asks for feedback on technical, commercial, operational support, relationship and all that... and we track that, and we react to these issues as they arise. So, we keep our eye very closely on that side of things.'

(Interviewee A1)

However, not everyone was convinced that the changing demands of customers, both traditional and new, were truly understood by the organisation; moreover, as one senior manager seemed to hint, there was even a question about whether the company ever truly understood customer expectations:

'Now we've been leaders in the services in our world, in our industry... TotalCare... corporate care...for decades, but in truth we've spent little time actually thinking about, 'what is the overall experience of our customers?''

(Interviewee B3)

That said, many participants acknowledged the business environment was changing and with it customers' expectations, expectations which were challenging the organisation's traditional business model. Even many of the large carriers who previously had signed TotalCare maintenance contracts with durations over 25 years were becoming more demanding both in terms of time spent on them, product improvements, as well as the type of services demanded, as the following comments attest:

'Our biggest customer on the [name of engine], is Cathy Pacific, they operate in Hong Kong, they've got 61x A330s with [name of engine] engines on them and they all typically want a meeting with me every six months, and they will be quite direct at the face-to-face meeting on how the engine is performing, what are the issues they have got with it, and they will demand that we come along with presentations on what we are doing to address these issues.'

(Interviewee A1)

'... the customers are getting more demanding, they want more fuel efficiency, everybody wants lower noise, lower pollution, and every generation of engine we do has to be a step change better than the rest.'

(Interviewee C29)

Such comments reflect the need for the organisation to not only have the ability to engage with customers, but to ensure that its processes and resources are agile enough to meet a variety of divergent customers' demands; yet as the following comments attest, achieving such agility has been problematic:

'So, we had to change some of our thinking inside our business processes and had to make them more agile, and make them more responsive, because from a competitor's pressure point of view ... we are not there yet! and there is still a lot of things that we do that do not meet the customer requirement!'

(Interviewee E26)

'[The drive for growth] puts huge stress in terms of our supply chain, it puts a huge challenge in terms of our... our... the robustness of our processes. In terms of being able to scale up and in terms of being able to...err...err...to meet the challenge, in an environment where we are not going to be able to scale up our people or our operating cost in the same kind of way. And that's a huge challenge for us!... I would say we didn't move as quickly as I think we should have done,

so it took a lot of the market and our customers telling us... and... umm... as a consequence we were probably...umm.... probably bottom of the pot I would say in terms of the other engine OEMs.'

(Interviewee C2)

Overall, there was a note of concern from many participants that whilst the aeroengine market was evolving and the organisation's drive for growth had brought in much new business to the company, it had brought with it increased organisational challenges resulting in an increased workload across MRO's and an exponential growth on customer management. Management of which was not just confined to dealing with the pluralistic needs of new customers, but a recognition that all customers were now becoming more demanding. The question therefore vexing many participants was could the organisation continue to deliver on its service obligations, recognising as many did, that successful service delivery was key to the long-term survival for the firm:

'...in this industry it is not a commodity driven, it is highly value, low volume products with small amounts of customers, long-term relationships 25,30,40 50 years...umm... so it's important that we look to the long-term and manage that, because the relationships with the airline customers are very, very important to our survival.'

(Interviewee A1)

The long-term relationships spoken of by the informant above enshrines the business strategy of the organisation's and is key to its TotalCare offerings, the heavily marketed mechanisms for the revenue generation for the business. These long-term contracts are recognised as essential for the long-term survivability of the firm, despite Perona, Sacconi and Bacchetti (2017) valid observation that the case study organisation continues *'still today to offer the traditional transactional purchase option aside of the "power by the hour" and "TotalCare" ones, in order to allow the customer to choose what best fits its requirements'* (ibid, 2017, p. 8).

5.4.3 Performing Challenge - Engine Product Performance

Participants' views regarding the challenges facing them in delivering the company's growth targets reflect an understanding that this ambition together with the development of customer-related capabilities is inexplicably linked. Consequently, managing both increased stakeholders and their

often-divergent demands is something of a prerequisite if such relational management is to be an on-going, fluid process rather than a static one.

In the past, the provision of associated services to aeroengines was thought of as a low-value activity; although it is fair to say that services of some description have frequently been offered, they were previously peripheral to the product and concerned primarily with routine and reactive maintenance to support said product (Johnstone, Dainty and Wilkinson, 2008). Indeed, service offerings may even have been given away 'free' as a bargaining tool to clinch a potentially lucrative sale (ibid, 2008). Today, service offerings are not only differentiators but essential components to the stabilisation and generation of higher revenue streams (Kamp and Parry, 2017; Rabetino, Kohtamäki and Gebauer, 2017; Raddats et al., 2019; Wise and Baumgartner, 1999).

Today's service offerings are often contracted out over extensive time periods; consequently, the maintenance of customer relationships becomes an essential component in the service provision. Harrison (2017) noted that in terms of meeting customer satisfaction within the aeroengine sector three elements ultimately define a successful service offering: reliability, efficiency, and downtime (ibid, 2017, p. 21). For a long time, the case study organisation had arguably met all three criteria, but of late the drive for growth was raising concerns that perhaps the supporting architecture for both development of NPIs and meeting the increasing demands from their installed base clients was no longer fit for purpose:

'...we are behind the curve in terms of where we should be in terms of industrialisation to support growth, so we are not outputting the engines we said we would, but that should be no surprise to anyone because we've known, we've sold the engines we knew this was coming, yet we're not quite there from a supply chain point of view... or indeed from a services perspective.'

(Interviewee E15)

'The drive for growth has caused issues with meeting delivery times, and in truth with reliability of some products. They are safe to fly don't get me wrong, but efficiency wise we have had problems resulting in more downtime than some of customers ... well let's say some are not happy and their shouts are being heard across the business....'

(Interviewee E30)

When discussing the performance challenges for aeroengines, the customer cycle can offer an interesting framework to view such challenges. The customer lifecycle of an aeroengine can be observed as three distinct phases: introduction, operation (with MRO services) and finally retirement. These phases and what challenges they bring to the organisation are explored below; specifically, the case study's various products issues which were now involving a considerable amount of management's time and effort to resolve.

5.4.3.1 Performing Challenge - new engines (Introduction)

The drive to win orders for new airframes is critical to the case study's business plan and hence its growth drive. But, as already commented by Harrison (2017), any product developed must be both reliable and cost effective (Kerr and Ivey, 2001). However, the aeroengine market is a competitive one, and although the case study organisation had made tremendous strides to become the number one engine manufacture, which quite rightly was a source of pride to many participants:

'...you know we did a really good job in selling all the engines to get to a point where the order book means we will be 50%+ of the market in wide bodies, which is a fantastic position coming from a tiny player where we were number three in the world for so long to now being number one is a pretty awesome success story...'

(Interviewee E15)

There was also acknowledgement that the competitiveness of the market now meant that the opportunity for wide ranging price fluctuations between competitors was limited, even though the expectation of customers sets the firm with a continual challenge of looking for ways to offer greater customer value at a lower price. Consequently, building and maintaining high quality products at competitive prices was seen as a key organisational challenge:

'Unit cost for me! So, I must have been through 3 or 4 programmes coming into service now and we always get the unit cost way off from where we say it would be in the business plan, so we then have to spend a long time and a lot of energy, a load of resource, a lot of money to correct something we didn't correct in the first place.'

(Interviewee E15)

'(long pause) So our biggest challenge is how to keep essentially investing in new technologies, new engines, for the future whilst delivering financial returns to shareholders to continue to meet expectations. That's one of the key challenges.'

(Interviewee A1)

In the past this case study organisation was used to delivering maybe one or two NPI to market and had a structure and processes capable of achieving that goal. However, the growth drive was now challenging many of the business functional areas, both in terms of stepping up to the reality of increased NPI delivery as well as building up capabilities necessary to support both future and current legacy customers:

'So, the big challenge today, is actually producing all the parts, and all the engines, and getting them out there to the customer. The challenge for tomorrow, in my part of the world, is that we will have three times as many engines that need to be serviced every year, so we are busy just now building up new overhaul base capabilities and developing partnerships with new people to carry out all that maintenance on the engines.'

(Interviewee D13)

'There are now tensions growing...tension between groups within different product lines, lot of conflict, conflict between priorities...so there is an interesting dynamic in the business...tensions around the technicality around how we do programmes, and the priorities and conflicts that they bring; then of course once you are through that you then have to Deliver at Rate. At Rate is the important word there, to the customer, and I think they are the two things, certainly in operations that keeps everybody awake at night.'

(Interviewee C12)

Interestingly, the improvement in quality and reliability of the aeroengines has also led to an unanticipated challenge to the business plan. Today, many 1st tier operators (Major Carriers) are selling their aircraft at the around the 12-year point, which means that often the 'TotalCare' offering contracted for 20-25 years is only a valid genuine revenue generator if a new operator can be found for the 'second-hand' airframe, and one who is willing to continue to pay for the service offering. This is not necessarily a given, as one manager was at pains to point out:

'...because we are putting so many more products into the market than we did 8, 9 or 10 years ago, we are now seeing a flood [name of case study organisation] powered aircraft coming onto the market that needs to be moved to different operators. So, we have assumed in our business plan that this engine will fly for 20 years at year 12 we need to make sure that it has still got

eight years flying left in it. So, we can't afford for it to be parked for a year or 18 months while someone else finds an operator to come and pick it up. So, my team now is spending an incredible amount of time speaking with customers about taking on...okay you have already got 10 x A330s, there are 2 x A330s coming out from Lufthansa over here, would you be interested in the rolling those over into your fleet. But because you are breaking up a big fleet of say 30 aircraft and selling it down to say 10 second-tier operators, the time it takes to have those conversations is enormous! And 60 to 70% of the conversations won't end in any transition that aircraft at all...'

(Interviewee C16)

5.4.3.2 Performing Challenge - maintaining operations

The introductory phase of the customer lifecycle traditionally lasts until the new engine has gained a level of acceptance in the market with engine production well established. Once this has been achieved the next phase is that of maintaining the engine's operation, a task often achieved through long-term contracts undertaken via the company's 'TotalCare' offerings. However, as 1st tier operators tend to be large and important players in the aerospace market, they consequently tend to require a considerable amount of management's time and effort to keep them satisfied, as the following comment attests:

'There are some customers who can dominate, and I imagine the top say 20% of customers probably take 80% of management's attention; but that is partly because they demand it, partly because they bought maybe \$5 or \$10 million of orders, huge orders, and they are huge drivers in our business...'

(Interviewee B27)

Once the first-tier operators have finished with an airframe they are often sold or leased to tier 2 or tier 3 carriers. The introduction to the aerospace market of these operators has brought with them many new challenges for company. The first one is trying to identify who they are in the first place, and then once identified getting them a 'fair voice' within the business, which can be difficult when competing against large, established, tier one customer needs:

"[As the airframe] goes down this life cycle of moving from 1st to 2nd to 3rd tier operators, then you have got that many more operators to challenge and when you factor in on top of that the kind of airline who may be interested in taking second hand aircraft may not be one who is currently a customer of yours because their route in to becoming a wide-body operator is to take a low acquisition cost, second hand wide-body, then you might not even know who they are!"

(Interviewee B7)

Everyone knows how it works, what we are meant to do, the responsibilities are fairly clear and so whether you're a one aircraft operator with TotalCare or a 20-aircraft operator with TotalCare, you will get the same service. However, if this one screams rather than this one - although both scream at the same time about something... then yeah, the large airline is going to get heard more unfortunately! Unfortunately, that is the case! In situations like that size and financial clout matters ... right or wrong...'

(Interviewee B27)

Such dialogic comments as seen above indicate that maintaining certain engines through their operations phase has presented the organisation with a variety of new challenges to meet as new and diverse customers are added to company's portfolio, all increasing the workload of many across the services organisation.

5.4.3.3 Performing Challenge - Final Phase (Engine retirement)

The three phases of an engine lifecycle are presented simplistically as a linear transition with the final phase that of retirement/disposal. Here, unlike the airframe which at this stage is practically worthless, aeroengines traditionally had a financial value as spare parts used for servicing engines on airframes remaining in-service and as such their value could once again increase (Kerr and Ivey, 2001); however, with today's improved and reliable powerplants this is no longer a given. This was a problem Lewis (1999) foresaw as improved and '*more reliable and competitive powerplants, engine manufacturers have fallen victim to their own success*' (ibid, 1999, p. 54). Today, as the aeroengine nears the end of its operational life the organisation is struggling to meet demands from customers to release the in-built value from the aeroengines whilst at the same time reduce servicing costs:

'TotalCare has been hugely successful...However, what we are finding as we move further through the lifecycle of these [engines] is that customers are wanting... wanting ... in some instances to release the value of the assets that they have...which in TotalCare doesn't naturally follow...err... because essentially we are...TotalCare drives you to put as much goodness into the engine as you can...whereas as you move through the life of the product, then you are more about how do you extract the value of the product rather than how do you keep putting goodness into it... and that drives a different thought process.'

(Interviewee C2)

'...when you now look at [Case study] products coming towards the end of their life...the big complaint from the market, the consequences of actions taken by us 30 years ago, is there is no

market for these parts... previously there was a big market for engine spares and therefore towards the end of their life, their economic life, or maybe before the end of their economic life, a financier or owner could dispose of that asset to get a reasonable chunk of money ... that would clear his book value or maybe give him a nice profit and that would be good... now have a dilemma, because it is now seen that older [Case study] products are less disposable, has less value, and therefore as we rely so much on financing in our industry, the financiers have started to push back. So that is an example of an unforeseen circumstance of TotalCare, or maybe we should have seen them, but that is by the by...'

(Interviewee B6)

Clearly, then the 'integrated solutions' has achieved what it set out to do; however, today the changing landscape in terms of the type of owners now operating airframe is challenging the case study's business plan once more, particularly in terms of its service offerings as 2nd and 3rd tier owners who are often not prepared to continue to be locked into a long-term MRO contract, preferring as one senior manager noted:

"The owners ... say to you in order to continue investing in [name of case study organisation] powered aircraft I need to see service offerings that overtime allow me to liquidate the value my investment otherwise there is no point in me having it... so, over time we have to develop our services to the benefit of all customers, not just airline customers!"

(Interviewee E15)

5.4.4 Performing Challenge - Delivering 'TotalCare'

Approximately 10-15 years ago some 85% of aircraft were not only owned by major airlines, but they also operated them; accordingly, the case study organisation's business plan was a vigorous product-centric business strategy, a point brought home by the fact that in 1980 its powerplants were sold to just four civil airframes (Smith, 2013). However, by 1996 this had risen to 27 airframes (ibid, 2013). In terms of engine deliveries by the start of the 1990s it had been around 400 per year, trebling to more than 1200 per year by the year 2000 (ibid, 2013).

Traditionally, MRO services had been provided by the airlines themselves or by independent firms. However, by the 1990s with the introduction of a new generation of technologically more sophisticated and reliable engines, the demand for spare parts began to decline; it was as Lewis (1999) explained, *'by designing and producing ever more reliable and competitive powerplants, engine manufacturers*

have fallen victim to their own success' (Lewis 1999, p. 54). For the case study organisation, the lack of demand for spare parts was more than just a matter of loss of some revenue, it was the loss of their most profitable revenue, for at the time the profit margin on spares was estimated to be seven times higher than that on new engines (Markillie, 2009).

Consequently, the company's traditional product-centric business model had to change. So, in the 1990s whilst still pursuing a broad product portfolio (Smith, 2013), the case study organisation embarked on what Davies (2004) refers to as a customer-centric business strategy; one that was designed to take financial advantage of the firm's now large installed engine base by developing a completely different type of service offering. Rather than the traditional 'time and materials' service it had previously offered, and which its competitors from the various in-house engineering divisions of the bigger airlines and the independent MRO providers still offered, the case study organisation sought to provide its customers with an innovative service, what Wise and Baumgartner (1999, p. 138) refer to as an '*integrated-solution*', where maintenance of the engine was a fixed price based on engine availability. Today, that means that when a customer purchases an engine, they can chose from a variety of different service packages offering a '*range of aftermarket and support services, on an agreed "cost per flying hour" bases*' (Johnstone, Dainty and Wilkinson, 2009, p. 527)

This new type of performance-based service contract, initially marketed as 'power-by-the-hour', today has developed into the firm's 'TotalCare' services and revenue from this new business model has steadily grown since its inception. In 1991, services represented just 25% of the company's total revenue and by 2000, this had risen to over a third, representing 37.5% of its total revenue. By 2011, revenue from services had continued to grow and amounting to 53.4% of the case study organisation's total revenue, by 2018, this had risen to 58% (Case Study Annual Report, 2018) and 60% of total revenue by 2019 (Case Study Annual Report, 2019).

Whilst the view described above can be said to be the classic textbook analysis of the events leading to the development of the 'TotalCare' business model, one interviewee, who was part of the strategy development, offered a rather less flattering view of how TotalCare came about:

'Umm.... It's funny, TotalCare.... I expect no one will tell you this... TotalCare was always a product that was created partly by mistake but created to meet the needs of [name of case study organisation] and not to meet the needs of the customer! So, it was originally looked at that we had some significant threats to our business and because of this, because we didn't have a service wrapped around our products because the customer could go and service their own engines or find someone to do it for them. Then we had to think how do we protect our aftermarket and our huge investment that we have put in this engine, and that we will need to recover in aftermarket? How do we do that in a way that can also try and pull cash forward and give us a much more even cash flow rather than totally the chart cash flow going up and down for different events? ...umm... so a big part of the TotalCare strategy was that if we don't take control of our aftermarkets someone else will, and we are so reliant on that aftermarket to push more investment in and generate new products that without securing that aftermarket we can't survive.'

(Interviewee B6)

However, during the interviews even the name of the product-service offering - 'TotalCare' - was seen by some as being problematic, believing some customers inferred from the name if not explicit then an implicit commitment by the case study organisation to full MRO care for all customers, whether they paid for the full coverage or not! For one interviewee responsible for customer services this was not only problematic in terms of customer management but raised questions as to the viability of the current model:

'So, our service name is called 'TotalCare' and to many customers what they buy no matter what they have specified in their service from us they want it to be TotalCare, and they believe it should be! But in reality, there is TotalCare and there is TotalCare! It is a complex offering and really quite how as a firm we should deal with someone who wants that portion of it but is not paying for it even if it sees that aircraft grounded, we have yet worked through that and come up with a very clear vision... So, going back to a point I made earlier a [Case study] powered aircraft not operating, not flying customers around ...that is ruining our reputation on a daily basis. So, we have to fix that and yet we are selling products and saying you can have this, or you can have that, and the implication there is that if you haven't taken this out you are not going to get it, but that can't be quite right! So, there has to be something done... the model isn't quite right just yet!'

(Interviewee C28)

Moreover, despite the company's success of its business model over the years, there was an unease expressed by some participants that unanticipated issues with TotalCare were now beginning to

emerge, issues that were exacerbating capacity and resource planning, and ultimately challenging the reputation of the organisation:

'So, normally if you had a growth curve, the assumption on that growth curve is that engines would get, simply, between shop visits without failing. However, we have one product that is not quite managing that so as a result you need more parts, you are putting more load on the system, you are taking capacity which would have been for the growth rate but is now required for repair and the system is challenged... and because of TotalCare that cost of repair is born by [Case study organisation] and failure is not good for reputations.'

(Interviewee A10)

The drive for growth in civil aeroengine programmes was also seen somewhat differently by those operating in the services arena. The concern here was not the issues in the short-term such as cash flow and profit resulting from the growth drive, but centered more about whether the organisation had thought longer-term, in particular about capacity planning. Participants recognised that the increase in the organisation's installed base that would inevitably come as the result of the organisation's growth drive was only going to exacerbate capacity issues: a perfect storm as it were between short-term and long-term thinking regarding alignment of capacity with resources and infrastructure. However, as one informant expressed it, their concern was that this type of aligned thinking was not evident to him:

'yes, it's a concern, maybe not immediately but ... the aftermarket will triple in the next 15 years. So, we will be up at close to 2000 shop visits as opposed to the current 700 shop visits, if you like, in the next 15 years....so it's only going to go one-way...and that's off the back of business that's largely already sold, so we know it's coming, there is a bow wave coming, we need to start thinking about that now, plan now...but I see little, if any, joined up thinking.. '

(Interviewee C2)

The comments above highlight another key component of the TotalCare offering that of risk transfer. By offering, for example, new technology to monitor engine performance with a comprehensive contracted service, it not only acted as a key differentiator from competitors, it crucially reduced the risk to customers who adopted their new technology (Baines and Lightfoot, 2013) as the responsibility for the reliability and performance of the product was transferred back to the OEM. Consequently, taking on the risk transfer required the company to establish *'the development of a service delivery network that is integrated into the company and fully accountable for service delivery'* (Jovanovic, Engwall and Jerbrant, 2016, p. 35).

However, operating such an integrated system means that when issues around a products operation are identified they need to be resolved efficiently and effectively. But, as identified by some interviewees the risk of meeting customer expectations when a product is failing, and the financial implication, to the company of such a failure, were proving a concern:

I will give you an example, so one of the big challenges we've got at the moment we've got a particular engine program that is not....umm... performing as reliably as it should and our actions are covered under our TotalCare agreement and service agreements and the customers' expectations of us and our ability to support them is very high....umm... and we are struggling to meet all their needs at the moment...and it means we are not offering a terribly good service!'

(Interviewee B4)

'...because of the issues we have got in-service with the engine and the financial penalties associated if we 'screw up!'... (laughter)... so, if we don't get this right both technically and if we... you know ... we have got some really challenging programme timescales that we need to achieve... there are some big liabilities and reputational damage associated with that.'

(Interviewee E19)

Another unanticipated challenge from TotalCare contracts related to changes in stakeholder power. As part of the drive to deliver an integrated service offering the case study organisation entered a series of joint ventures to create a global MRO services operation, aligning them to service different global catchment areas. However, like the unintended consequence of improved products development, the rise of joint ventures with MRO services has also led to price challenges not just from customers but also from the MRO providers:

"...we are trying to expand our network of overhaul shops to drive-in competition but every time we drive-in competition and change, and remember that aftermarket price is already set, everytime you come to a customer to change his contract, or we need you to send your engine to somewhere else or we need you now to ship it across to China, it's never... "okay we will do that!" it's "okay we will do that... if" ... and they always want a share in the benefit and of course that hasn't been linked in to this hard and fast set price! So, you are seeing price pressures from the supply chain, you are seeing price pressures from the customer, and you are seeing these overhaul shops now because the more and more product we put into the market the more leverage and power the overhaul shops have because we have to overhaul all these engines".

(Interviewee C16)

Finally, unease was expressed about the flexibility of the TotalCare package and how the rise of Tier Two and Tier Three customers were putting a strain on the organisation's traditional business model. Traditionally the OEM saw large carrier airline fleet customers as key to the viability of TotalCare. By offering long-term service agreements in which the OEM service provider guarantees a fixed engine maintenance cost per hour based on a utilisation basis, airlines were left free to concentrate on their core business (Johnstone, Dainty and Wilkinson, 2009). The service contracts entered into were often for more than 25 years in duration, with the OEM break-even point around the 15-year point. However, the increase of Tier-two and Tier-three customers would appear to challenge this business model, as was explained to the researcher thus:

'So, Tier One are genuinely the ones who have the TotalCare package for a period of time, then you have Tier Two or Tier Three they haven't got that much money, some want TotalCare, and some want to maintain their own engines and pay for it as and when [Time and materials]. So, it's a different dynamic again. In Tier One we are trying to make the engine last a long time. In Tier 2 you don't want to do that because you want the engine in to the shop as often as possible so we can make money out of that. So, you have a different dynamic depending on who operates and why, but then the Tier 2 and Tier 3 operators generally have less money... So, your aftermarket is continually being eroded by customers coming in for discounts, because they are trying to make money as well; or you can have TotalCare with a customer, which is an agreement for 15 years, but that airline is about to go bankrupt, and they come and renegotiate the TotalCare contract because they don't want to go bankrupt! So, again what you thought was an agreement for 15 years is now renegotiated...because if you want to keep your engines flying and for them to use our product, you negotiate or you pay the risk of them passing the engines onto someone else....So, do we take the gamble that those engines will be picked up by somebody who can afford them, or do you just discount them and take what you can at that point in time? So, the aftermarket, the services stream that is supposed to be profitable part of the business model is consistently being eroded. So, if you don't make money in the front, you're getting less and less money at the back so the whole business case slowly unwrapping.'
(Interviewee E8)

'Interesting question! ...So, when I look at, certainly in large engines, there are very few customers who do not have some sort of TotalCare arrangements with us, but the danger we have got now is particularly in the [name of engine] and [name of engine] fleets where they are getting to be 20-30 years old, they are likely to go into second tier operators who will not be

able to pay for TotalCare in the same way that the first tier operators could... and I think that will give us a big problem!

(Interviewee D13)

Whilst reaching the number one position for aeroengine manufacturing was applauded by many of the interviewees, there was recognition also that whilst any changes in terms of new competitors and threats within design and development would be slow to emerge and threaten the organisation's dominant position; within the delivery of its services this was a different matter, here the threats to the organisation's dominance were harder to define, as the following comments attest:

'In the product world there are only two or three others who can do it, literally only two or three who could go and do it. However, in the services world... in overhauling engines there is suddenly 25; in providing finance there is suddenly 100s, and in the world of data analytics maybe there's thousands; maybe some of those competitors we have not even heard of yet! So, I think there is a massive sea- change going on in (services), whereas the product world is pretty stable... umm... the barriers for entry into service are in some places very, very low... again this is a challenge for the thinking capacity of the management of the company, to analyse those different things and I think that it is where more and more in the services world we are going to be challenged in that sort of way...'

(Interviewee B4)

5.4.5 Performing Challenge - Effective Communication

To some participants the tensions around products and performance were not helped by what many saw as poor internal communications. The challenges posed by product issues and managing growth were exasperated by what many perceived as ineffective communications not necessarily up and down the 'stovepipe' but often by the lack of cross functional communications, and not just between the various senior managers, but also between the various project teams:

'That is a good point! We don't talk to each other a great deal, we are separated from an engine... and you probably know this already, but the engines are separated into specific projects...so we are currently here on the [name of engine] floor, and do they share everything between this project, which is 20-year-old project, with the brand-new project of [name of engine] project... I don't think so!'

(Interviewee C16)

'Communication (laughter) ... Well how about we actually start talking about it [issues], that would be a good thing; actually, acknowledge that there may not be a simple or finite solution

to some of today's issues!... So, having a framework in the company where we can bring some of these challenges to a wider senior management audience, having a discussion on sharing information and helping each other make these tough decisions...we are probably starting to realise that we need to talk about that; being managers we need to talk more!

(Interviewee A1)

This lack of communication was seen by some participants to result in confusion often between what is supposed to be done and what is being done, a point acknowledged by a key internal stakeholder:

'Umm...interesting...I think the gap that comes to mind is as a stakeholder in what the project says it is going to do and deliver. As a key stakeholder and all that, it feels like that piece of the jigsaw is missing! They do not even know what they're planning to do, they don't know how they are budgeting it or where we can and can't move on certain things. It feels like we are playing a kind of blind game of cards at times!'

(Interviewee C29)

5.4.6 Performing Challenge - plurality of stakeholder needs

Management scholars acknowledge that within any organisation there exists critical interdependencies, ranging from those internally amongst various business function and employees, to externalities between customers, investors, and communities (Post, Preston and Sachs, 2002). Performing challenges within organisations are often attributed to the demands from this multiplicity of stakeholders. Smith and Lewis (2011) note that such plurality '*fosters multiple and competing goals as stakeholders seek divergent organizational success*' (Smith and Lewis, 2011, p. 383).

The term 'stakeholder' came to prominence in the work of Freeman (1984) to describe those people who are either directly or indirectly involved in the operations of a firm. In their book, Post, Preston, and Sachs (2002) go one step further and argue that stakeholders are directly involved in the creation of wealth for a firm and as such managing their needs is critical. This is perhaps no more so than for an organisation delivering a servitization strategy, where the move from traditional product manufacturer to PSS provider changes the '*buyer-seller relationships from transactional to relational*' (Penttinen and Palmer, 2007, p. 554) and is a conscious decision of management, one recognising that this is where the ultimate sources of organisational wealth come from (Leana and Barry, 2000).

Many of those interviewed recognised the importance of relational capabilities for managing both internally and externally of key stakeholders to ensure the effective running of the business; however, as one interviewee pointed out, the plurality of stakeholders now with a vested interest in the case study's business was more complicated due to their numbers increasing over the years:

'So, let's take the airlines market, there are ... we don't just talk to markets who engage with airlines ...there are a whole host of stakeholders including lessors, financiers, appraisers, banks, whoever may have a legitimate influence on our prior end customer which is the airline. So, we have been at pains to extend our definition of valued customer over the past 3 or 4 years to make sure we don't overlook people like lessors, and we treat them as customers because they are...although this has undoubtable complicated and increased our workload'

(Interviewee B7)

Dealing with the variety of interested parties, both externally and internally to the business, was to some participants' both frustrating and time consuming. Under the theme 'Performing challenges' participants' had expressed concerns on a range of issues: product reliability to unintended operational maintenance and disposal challenges; as well as unintended consequences from the TotalCare offering. Consequently, how to propound the often heterogenous, competing, and inconsistent perspectives held and championed was a challenge raised by many:

"What I am seeing is a vacuum of strategic development that the middle management are left trying to fill, and because at that point you significantly increase the number of stakeholders, clearly there is more middle management than senior management, it takes longer to get around those people and drive consensus."

(Interviewee B9)

"there is a lot of reasons not to progress things because the sheer number of stakeholders that you are going to have to get around and convince, you are starting in such a fundamentally different position, and that can become quite overwhelming..."

(Interviewee C12)

Everytime I talk to a project leader and give some coaching too on how to set up a programme of work that is under the transformation portfolio my advice is 80% of your first three months will be spent on stakeholder engagement... umm... and they go No!, No!, No!... but I tell them that 80% of your time in the first three months will be spent with you going around and talking to people, making sure that they have an input, what you are doing is shaping how you set the project up because if you don't get people to buy into it and feel that they have had their

opportunity to input into it, it doesn't matter if it's the best idea in the world.... It won't go anywhere in this organisation; it will get vetoed!

(Interviewee E26)

Delivering a servitization strategy demands personnel with a 24-7 mindset with good customer relationship skills and communication capabilities (Brax, 2005; Gebauer et al., 2008). Managing the plurality of stakeholder needs is seen as a key determinate in delivering a successful service, but is often challenging by the elusive requirements of customers as to what they perceive as an acceptable service (Baines and Lightfoot, 2013). Moreover, some participants contend that the effort required to manage such divergent requirements was not just time consuming, but was the cause of some internal political tensions between various parts of the business:

'But there are loads of different people with competing agendas at the moment and there is so much change going on because everybody wants something slightly different... I think that's one of the biggest changes from 15 years ago... we used to operate more as the collective unit, whereas now we operate as a lot of individuals vying for their own agendas.'

(Interviewee E14)

'There is still a lot of the old boundaries that are there when we were separate businesses, and obviously supply chain would blame the customer team, etc. and it still feels like there a lot of those tensions still there, we haven't got the feeling... people are still in their old tribes!'

(Interviewee E26)

Moreover, as the interviews progressed it became clear to the researcher that many participants saw that compounding the internal stakeholder challenges was also a threat posed by external stakeholders and their growing demands on the business:

'Oh yeah stakeholders do apply pressure, there is an assumption that... it is almost like the Emirates philosophy: "I run an airline and you do everything else!" ... I am guessing that subject has come up in previous conversations because you have picked up on a key issue of tension in the organisation-stakeholders!'

(Interviewee C29)

'[External stakeholders] they always want statistics that is what they thrive on. They always want to know what you are doing and when, and the more specific you can be, the more they like it; but the less we like it because it gives us no bandwidth to manoeuvre... umm... and the less you should give targets out because they will always remember them, and externally stakeholders.... they never forget! They will always come back, so if you said something now,

in 5 years' time they will come back and ask you about it, whereas internally people will have forgotten about it and moved on.

(Interviewee E14)

At section 5.3.3 the impact of 'outsiders' was discussed in relation to 'organising' challenges. Under 'performing' challenges an external threats were also veiled in terms of 'outsiders' being brought into the business by the CEO, exacerbating concerns of some participants who perceived these 'outsiders' views and actions as not aligning with the traditional encultured ideals and values of the organisation:

'If you go back 10-15 years ago people were life-long [name of case study organisation] people who at the top, they had come through the business...so all those people knew the business, knew the markets, there is not one of those left – not one!...now not one of the heads of the business have been with the company for 5-15 years probably, most have been brought in from outside, at different stages of their career, very few come in now having been in the company for a long time.'

(Interviewee E15)

Others, however, saw the introduction of external appointees to the business in more beneficial and expedient terms, with the organisational tensions they create simply the growing pains of an organisation adjusting its cultural image away from one of a 'staid' traditional OEM to one more agile and modern PSS organisation:

'My personal view is that all these external people that we have had at the very senior levels, and on the board, all have got different views and different insights, and they are all coming in to try and break the culture, that dominant logic that [name of the case study organisation] has got, which we ultimately need to change if we are to go on and be successful.'

(Interviewee E16)

Following on from the last comment, Brax (2005) noted that in delivering the radical change necessary for a successful servitization strategy it was essential that a firm undergoes radical internal change in both its management's philosophy and approach (Homburg, Fassnacht and Guenther, 2003). So, adopting a servitization business model '*is interesting because it implies new types of stakeholder relationships*' (Manzini, Vezzoli and Clark, 2001, p. 856) and whilst the landscape of stakeholders is more complex due their multiplicity, failure to address the plurality of their needs can become a roadblock to servitization implementation, and possibly its failure.

The findings in this study support the suggestion that understanding the strategic intent of the organisation requires an understanding of potential conflicting objectives between internal and external stakeholders and once identified require opportunities in which to build a '*close and collaborative modus operandi*' (Nordin and Kowalkowski, 2010, p. 450).

In the interviews conducted there were divergent views on how successful the consensus building was in terms of trust between external and internal stakeholders, and the strategic direction and needs of the company, with one senior manager believing there was a very real threat on the horizon that key external stakeholders could further instigate more structural change to the case study company if improvements in performance were not forthcoming:

'How quickly can we change, and can we change in a timescale that is quick enough before someone like Value Act [a San Francisco -based investment company that manages more than \$16 Billion on behalf of some the world's largest institutional investors], or someone else, goes actually we can make this company run more effectively than their current management or Top Leadership Team! You know, buy it, go and bring in a whole new management team and run it much more efficiently... that is the threat, can we change fast enough to:

- a. meet the customer expectation, and*
- b. meet the expectations of our shareholders,*

because we are clearly not doing well enough at the moment.'

(Interviewee E26)

5.4.7 Performing Challenges - Financial concerns

Servitization scholars acknowledge that one of the key rationales for undertaking the servitization journey is the financial incentives, such an enticement can be expressed as extending services offers manufacturers the promise of greater revenue and profits (Eggert et al., 2013) and helps to stabilise cash flows (Oliva and Kallenberg, 2003; Fang, Palmatier and Steenkamp, 2008; Neely, 2008; Salonen, 2011; Storbacka et al., 2013).

However, following such a strategy requires the addressing two fundamental issues: First, the need to create the demand for service offerings, and second, the need to manage costs both in product development and service offerings if the firm is to turn revenue into profit (Eggert et al., 2013). Both these challenges are said to occur simultaneously (ibid, 2013, p. 24). The discussion on the challenges

facing the organisation over its drive to create demand (growth) has been explored previously in this thesis, so this section will look specifically at some of the financial challenges raised by interview participants.

Throughout the data gathering exercise, and for some time afterwards, the researcher was cognisant that the case study organisation had, without doubt, faced numerous financially challenging years: For example, in 2015 the company issued five profit warnings to the 'City' in 20 months; 2018 - 2019 problems on [name of engine] engine turbine blades used on Boeing's Dreamliner range of aircraft, resulted in airlines having to take aircraft out of use while the case study company attempted to fix the problem – this resulted in a pre-tax loss for the organisation in the first half of 2018 of some £1.26bn [BBC Business News](#) (2018).

On top of these events, the ability to deliver financial profitability and stability were also impaired by the organisation having to pay £671m in penalties in 2017, the result of a long-running investigations by the Serious Fraud Office (SFO) into claims the case study organisation had paid bribes to land export contracts [The Guardian Business News](#) (2017). Throughout this time the organisation also had to contend with the impact of challenging commercial markets with increased competition from competitors and fluctuating oil prices. Finally, there was the ongoing costs associated with the organisational restructuring that the 'financial markets' saw as essential to drive efficiency and reduce costs if the company wanted to rebuild trust with the markets.

The outcome of these external and internal financial pressures was a clear concern for many across the organisation, and during the data gathering phase of this research, financial performance was still occupying senior management's attention, as can be seen by one senior manager's apology for his reduced availability for interview:

'Yep... sorry one really quick one, I have got until 25 past, simply because I need to get somewhere to listen to this week's announcement on our financial results via WebEx. After [name of case study organisation] announced a £4.5 billion loss this morning, I rather need to understand its implications in order to explain it to the rest of my team.'

(Interviewee B4)

However, as Sousa-Zomer, Cauchick-Miguel and Neely (2017) note focusing on factors from only one perspective often neglects the multifaceted and interconnected nature of many elements that contribute to an organisations financial outcomes. So, in understanding the performance challenges in respect of financial concerns the findings in this section will comment on external and internal financial pressures, unit cost and revenue concerns, and the financial pressure to manage customer expectations whilst trying to manage cost lines. This balancing act between maintaining customer satisfaction and the financial returns required by various stakeholders was challenging, as acknowledged by one senior manager, but nevertheless one of his clear priorities:

'The biggest challenge is the optimisation of customer satisfaction and financial returns, that's for these in-service projects Clive, getting that balance right, is what I keep my eye on all the time.'

(Interviewee A1)

But it was also becoming clear to the researcher from the discourses undertaken that the variety and complexity of the challenges facing the case study organisation was causing some participants to wonder if achieving the financial goals of the organisation's corporate strategy, though necessary, were now even possible, without even more organisational change and disruption:

'From my end of the telescope looking out, looking at how challenging delivering our financial results are every year, it's just becomes... it feels harder, and harder and the more issues we have puts challenges on delivering those returns. It feels like our plan needs a double six on the dice to be successful, it [the organisation] doesn't feel balanced, and I see that as an issue.'

(Interviewee E21)

Within the case study organisation, Profit and Loss (P&L) responsibility is held by projects, a role that sees them having to balance the often-competing needs of the customer teams in Regions who can be trying to sweeten deals or address customer concerns, with the organisational needs to control unit costs. This tension was muted by many participants and explained best by the following informant:

'I don't...envy...although actually that is one of the advantages of holding something central...someone who is not in that day-to-day exposure and is able to objectively say yes or no...we often find the project holding that line and being in tension with the region wanting to do something. So, I think those are the areas where you will never get away from there being a tension on that score the best you can hope to do is to provide some clear boundaries for them

to operate within... Certainly, on the sales front we have done that well, we have done that less well in the service delivery space and we know we need to do make that better!

(Interviewee A5)

However, the act of balancing financial decisions was not just a project verse regional tension, but one facing many business functions, and seen by some as an apparent trade-off between honouring external customer promises and internal functional needs, a balancing act that for some was hard to reconcile:

'You know, I see examples of people in operations who will get frustrated because they can't spend £2000 on a maintenance routine on a machine that keeps breaking down, but then we will go and give the customers a £1M in compensation because we haven't provided enough parts...it's crazy!'

(Interviewee E26)

'we are, how would you say, in the short-term we are in a difficult situation, quite frankly we have taken on a huge amount of new products that we are investing in, so one of our key challenges is how do we keep generating enough cash to keep the business going and continue to grow the business for the long-term...that is both challenging and frustrating!'

(Interviewee A1)

As mentioned in this sections introduction, the financial penalty imposed on the business as the result of the SFO case was substantial in terms of the immediate agreed financial settlement of £671M. However, to some interviewed, the collateral damage from the SFO fallout such as the imposed headcount reductions *inter alia* also had an immediate financial impact:

'We also have had the SFO investigation, so obviously a fraud investigation into the business effectively, which in the Civil business has taken out a whole raft of senior managers. Very few people that I know who were around 10 or 15 years ago, who were around until three years ago, are still here. Most of them were asked to leave'.

(Interviewee E8)

The reduction in headcount, although initially may appear as a unit cost saving, can nevertheless have significant cost implications to the organisation if the reduction results in the loss of key skills. To some interviewees the headcount reductions were seen as 'false accounting' in the sense that any cost savings on headcounts was being eroded by the costs incurred of having to hire staff again to fill those

posts. Such a situation was felt by some interviewees to have occurred in the latest round of headcount reductions:

'They have previously got rid of a lot of people they needed and now they're paying the expensive way to get new people back in again! So, the experience has gone one way and now we're having to take people back in and train them from scratch...So we have a lot of emails going out about: headcount would be one. So, we have messages saying we've taken a lot of senior management out, which we have; however, they are actively being replaced now by other senior managers, so there are new roles popping up all over the place...'

(Interviewee E8)

Another concern expressed in the interviews related to the way the corporation required financial costs to be measured and reported; with some participants believing that such financial KPIs had a direct impact on some of the internal behaviours displayed. In particular, concern was expressed about accounting for tangible and non-tangible value activities, i.e., the perceived tension between financial performance measures for the predominantly engineering focus of 'shiny toys' verses the often-non-financial performance measures of maintaining customer satisfaction embedded in service activities.

Those operating within the 'shiny toys' functions of the business were portrayed as having an easier time accounting for their activities due to their demarcated activities which could be monitored and measured to a financial value; however, within services, such absolutism in defining and measuring discrete activity and valuing time spent of customer service activities, though important, was more problematic in assigning a financial value. Leading to some interviewees to express that old management adage of 'you monitor only what you measure', a view captured succinctly in the following dialogic:

'.... because we report R&D and non-R&D spend to the city that drives a particular behaviour set that made us book and track what the people were doing, what we're spending the R&D and non-R&D cash on, which was predominantly engineers. So, you got a sort of measure and control, what you can control you can measure. However, in the services arena...umm...they were spending other money, that wasn't reportable, therefore we didn't track it, therefore when you start asking questions like the one you just did there is not a set of toolsets about or metrics to understand what you were doing. So, it is about... you can improve what you measure but if you don't measure it you don't know!'

(Interviewee D22)

Throughout the interviews the subject of cost was not far from the surface, whether referring to the unit costs involved in NPI, the costs to the business of product failures, or the costs to the business associated by some with resource constraints. But as one interviewee commented there appeared never enough money to cover them all:

'You can never find enough money to do both the buns of the elephant and the improvement in the fundamental systems.'

(Interviewee A5)

In terms of the unit costs incurred in NPI, a challenge raised during some interviews related to a role conflict within the business plan. Such a conflict could be described as a dualistic tension between Sales selling NPIs at large discounts, rather than at cost price or above to attract customers to their products, versus the organisation's requirement for effective financial forecasting necessary to determine the NPI's break-even point:

'...we are selling engines at such a large discount upfront in order to make the revenue back through our TotalCare aftermarket services ...it is going to put huge pressure on our business model because we are constantly under price pressure from Airbus and Boeing, price pressure from GE and Pratt, and we're under price pressure from the customers themselves, who have either got existing [name of case study organisation] products that they want us to price match or they are looking at other aircraft with competing engines... so the price pressure is enormous, the cost pressure from all these new production programs is really intense at the moment, and trying to make sure that when I am trying to estimate everything today it is going to be the same in year six, year seven, or year 10 is really tricky.'

(Interviewee C16)

'So, our business model is all these upfront development costs, which are billions, get it into the marketplace through highly discounted new engine sales, put in the long-term service contracts (TotalCare), then develop the revenue from that hopefully...but now, forecasting our breakeven point is getting more difficult'

(Interviewee C29)

The rising unit costs within the business as well as the low sale cost of the organisation's NPIs led many interviewees to acknowledge that unit cost reduction was now a major focus of the organisation:

'the real challenge in the business now is how do you deliver the cost line in the business...umm... and that can be the cost of the product, but equally it can be the cost of the people and the infrastructure that is required in order to service that increase'.

(Interviewee C2)

It's called the Unit Cost, this is what we are talking about, and the unit cost is too high at the moment for an engine programme. So, a new delivery of [name of engine] on an A350.... we make losses on those engine programmes... we could make £2 million loss on those engines and that goes straight to our P&L ... So, that is the big focus, driving those losses out.

(Interviewee E14)

In tandem with trying to reduce unit costs and the issues around that exercise, another challenge expressed by a variety of participants concerned the effectiveness of the current financial business model. Whilst the model had been successful in delivering profitable revenue over the long-term through tying customers down to extended MRO contracts such as 'TotalCare', to some there was an unease growing that many customers were now looking to offload assets sooner than previously planned, and were now demanding access to the assets residue value. Such demands were now putting a strain on organisation to not only convince new customers to continue with the previous 'TotalCare' offering or a similar one; but more importantly such demands were detrimental to the original forecasted breakeven point for the engine raising questions as to the profitability of certain products:

'umm... as I said you need to find a way of securing the revenue that you are assuming that you will get and so when a change happens, so when say you lock that revenue in so you say everyone is going to be under TotalCare...then you suddenly get something that changes that rock steady assumption you can have quite an event, quite an accounting event. So, the [name of engine] as an example, are not going to all fly for 25 years because there is a residual value issue, it's not how I thought it was, you start reducing that period to an average of say 18 years you have suddenly got quite a financial shock there!

(Interviewee B6)

'So, any cough either in translation of extension of TotalCare... any change in those fundamental assumptions...either in terms of finance or accelerated retirement profile if you can't meet that new price point..... that is by far the biggest tension we've got in our, in our space, in terms of financial exposure.'

(Interviewee A5)

Moreover, in certain quarters there was open acknowledgement that the anticipated financial returns on some of the engines were not being realised, and more worrying never would:

it's not the most common thing but I know a number of deals with large airlines where we make no money or we are making a loss...it is not something that they originally thought about, they never entered into the deals thinking they were never going to make any money, or whatever it is... and we can call them strategic programmes or new campaigns or whatever it is they called it at the time, but there are a number of campaigns that make absolutely no money over the life of the programme...'

(Interviewee E8)

Umm... I don't know of any that are not generating a profit, but that said ... (laughter)... there are some that are not generating as much profit as we thought they were going to do!

(Interviewee E18)

To others, the current long-term plan for revenue generation was problematic as it not only depended on successfully modelling the costs associated with the development and delivery of the NPI, but also, and more importantly to some, the requirement for the product to be right first time. If it is not, then fixing any issues adds to the unit cost and eats into any projection of profitability:

'When you put a new engine into-service you have hopefully an idea of what those costs will be, you are selling it at a loss, so you are cash negative on the hope that your estimations on what your costs going forward will be correct. Now the customer doesn't need to care, if the customer is paying 300 dollars for every flight hour he flies and [name of case study organisation] now carries all the risks of what those costs are; so, if we suddenly find in four years' time that actually the cost modelling of this new engine was wrong and it costs us 301 dollars to maintain that engine, then we are in real trouble.'

(Interviewee C16)

'We have had a few issues and that particular engine has had numerous role programmes we call them ... and I think were on for [name of engine] now, so we've had Package A, Package B, Package C and then a [name of engine] and the latest... so by doing that each one has involved more and more investment that we weren't going to do!

(Interviewee E14)

5.4.8 Summary of performing challenges

The drive for growth, whilst acknowledged by participants as a crucial endeavour for ensuring the organisation's survival, had nevertheless brought with it complex organisational issues at a time when the changing aerospace milieu was questioning not only traditional supplier-customer relationships but also raising questions in some quarters about the continued logic and efficacy of the TotalCare contract model.

From analysis of participants discourse the thematic node of performing highlighted numerous generative external and internal challenges facing the organisation. External challenges were frequently presented as the outcome of pluralistic and conflicting stakeholders' demands. Internal challenges concerned the organisation's performance in areas ranging from the perceived lack of coordination over the engine ramp-up in relation to resources and planning, to questions over the value of certain performance metrics. Moreover, disquiet was expressed as to the impact the growth of tier-2 and tier-3 customers and their divergent needs would have on the organisation's business model and 'TotalCare' performance. These concerns all fed into an overall worry that the financial picture, despite increased engine production output and talk of sales growth boosting revenue still had many apprehensive about the future.

The next node to be examined is that of Belonging.

5.5 BELONGING Challenges

Under the thematic node of Belonging, the challenges presented can be interpreted as the result of the complexity and plurality of the organisation, resulting in challenges to actors' values and beliefs at the individual, group, and organisational level. Such challenges are particularly relevant during periods of change (Smith and Lewis, 2011; Jarzabkowski, Le and Van de Ven, 2013), as different organisational functions embody different values, beliefs and identities. This is the backdrop to the comments situated within the theme of Belonging, and specifically cover actors' comments on how the various competing factions within a pluralistic organisation have a mutually constitutive and recursive relationship affecting employees' values, beliefs and ultimately their identity.

5.5.1 Belonging Challenge - Organisational Politics

From an interpretivist perspective one can argue that politics is an inherent part of social life (Easterby-Smith and Araujo, 1999) and as such one can construe organisational politics at management and individual levels problematic (Mujib, 2017). Evans and Qureshi (2013) define organisational politics as *'the behaviours of individual's that seek to maximise their self-interest and conflict with the goals and interests of others'* (ibid, 2013, p. 35) and is often triggered by ambiguity (Kreitner, Kinicki and Buelens, 2002). Organisational politics thus thrives in role ambiguity when objectives are unclear, performance criteria and measures are abstruse or vague, resources are scarce, and decision processes are nebulous.

The roots of the external and internal challenges faced by the case study organisation in this research are premised on the argument that management's decisions are the result of a process in which decision-makers are individuals with conflicting and competing logics and although they are rational beings, that rationality is multidimensional, and so decision makers may be seen to be rational in some ways, but not in others, thus presenting a more heuristic approach as it were than traditional rational and bounded rationality modes of thinking (Eisenhardt and Zbaracki, 1992).

In this study, growth was universally presented as the principal challenge facing the case study organisation by almost all interviewees. Growth can be seen in both a positive and negative light with

conflicting preferences said to arise from different cognitive bias on how participants see the organisation. The organisation under study can be viewed as a 'pluralistic system' fractured along the lines of product and services and characterized by multiple objectives, and diffusion of power and knowledge-based work processes. Such a system results in multiple challenges for management as the organisation confronts the co-existence of a variety of logics or rationalities as personnel seek through organisational politics to influence, enhance or protect the self-interest of individuals or groups (Kreitner, Kinicki and Buelens, 2002).

Whilst political behaviour is endemic in all organisations (Riege, 2005), politics at the intra-or inter organisational level can be particularly disruptive as it reduces levels of trust and impedes efforts of collaborative working and knowledge sharing (Evans and Qureshi, 2013). A contradicting perspective however believes that politics within an organisation is only played out when power imbalances are triggered, perhaps caused by, for example a frustration with command and control style of leadership or lack of trust caused by poor information flow, and is then only used as a last resort to impose their views (Eisenhardt and Zbaracki, 1992). Subsumed under the guise of organisational politics some of the tensions presented by interviewees appeared to be based on that of competing standpoints between various functions, both externally and internally:

"We now don't operate as a company, it used to be 'create one, used many times' and that used to run through the theme of the company, now civil doesn't really talk to defence, which doesn't talk to marine, which doesn't talk to nuclear, etc, etc, we are all running as disparate parts now and all do compete for attention but civil gets all the focus because it's the largest in capacity and most profitable.... I think that's one of the biggest changes from 15 years ago... we used to operate more as the collective unit, whereas now we operate as a lot of individuals vying for their own agendas."

(Interviewee E14)

"There is still a lot of the old boundaries that are there when we were separate businesses ... and it still feels like a lot of those tensions are still there, we haven't got the feeling ... people are still in their old tribes! The badge they are wearing is, 'I'm an operations person or I'm a civil large engines person' rather than 'I'm a civil aerospace person'."

(Interviewee E26)

Whilst scholars might argue that organisational politics strongly conflicts with the interests of both employees and the organisation (Evans and Ahmed Qureshi, 2013) political manoeuvring in this study it was seen by some as necessary in order to influence others and help promote personal objectives (ibid 2013):

"[Name of organisation] is all about politics! ...Yes, seriously.... you need to understand the politics of the place to get on and get things done! ... So, it is about who you annoy when and who not to annoy... you will always need favours from someone else and this place runs on favours; you can play your politics and know who to annoy and when but recognising that you will always need somebody at some point in time is key to success here".

(Interviewee E14)

"Yeah ... if you don't play politics, you won't get anywhere in this place! It is about making life easier for yourself by playing politics."

(Interviewee E8)

"...from an efficiency point of view, on a company again of the size and scale we are, that is actually an intense level of effort we are putting in just to manage our internal politics as opposed to getting stuff done!"

(Interviewee E26)

5.5.2 Belonging Challenge - Identity

In this research the discussion of identity relates to those distinguishing and permanent characteristics personnel use to describe their organisation (Albert and Whetten, 1985) and thus situate their own place within it. Hatch and Schultz (2002) defined organisational identity as '*... the internal-external dialectic of identification as the process whereby all identities-individual and collective-are constituted*' (ibid, pp. 993-94).

From such insights, it could be argued that organisational identity resides in an organisation's distinctiveness recognised through its core activities and cultural attributes which together provide its differentiating characteristics from that of other competitors. Such an assessment can be supported by Gioia's statement (1998, p. 21) that '*organizations maintain identity through interaction with other organizations by a process of interorganizational comparison over time*'. Academics across both

psychology and sociology domains have contended that an individual can present multiple identities and that organisations have the same capacity (Pratt and Foreman, 2000), and whilst multiple identities can appear antithetical and present conflicting demands on the organisation, there control is nevertheless a key challenge for management (ibid) as the relationship between employees and the organisation's identity are said to be reciprocal as how an organisational behaves can have a fundamental impact on its employees' behaviours, and vice versa (Pratt and Foreman, 2000).

From participants' discourse analysis, the subject of identity bifurcates into two schemas: Internal and external. The internal frame (reflected in the organisation's culture) relates to the cognitive deliberation of individuals in answering the questions: "what does this organisation stand for?" and thus being able to identify with "Who we are" (Corley et al., 2006). The external frame is more about answering the question "how do others see us?" and is thus more related to brand and image of the organisation (Mujib, 2017). These two schema frameworks are analysed further below:

5.5.2.1 Belonging Challenge of Identity - Internal frame (Pride)

Mischkind (1998) referred to organisational pride as a positive and upbeat feeling that individuals hold about their institution. Such feelings are an emotional response based on the value individuals place on how they perceive the status of the organisation as seen internally, with employees and management, and externally, by the likes of the media and the public. Throughout the data gathering stages of this research, it became clear from many conversations, both formal and informal, that there was a great sense of pride felt by many of the participants in working for the case study organisation:

'...I actually like the fact that I feel part of a historically British engineering company. I think that is something that we shouldn't be ashamed of saying, that is at the root of what [case study organisation] was about, and how it came about, you know, and where we have evolved to... it is a fantastic company with lots of wonderful attributes...'

(Interviewee E24)

'...so, certainly when I go around the world, I am proud to be working for [case study organisation] and always have been and, that is if I'm honest, is why I stay.

(Interviewee C28)

The value of a strong identification with an organisation can be an essential psychological anchor for employees during times of upheaval providing them with a cognitive schema of stability and consistency in changing times (Albert and Whetten, 1985; Gustafson and Reger, 1995; Nadler and Tushman, 1988). However, whilst overall there was a sense of collective pride in working for the organisation, on probing interviewees further about their current experiences, events over the last few years, ranging from SFO investigations, product reliability issues, large scale redundancies, and large-scale change programmes were starting to raise questions in the minds of some interviewees as to where the company was going and its identity.

Furthermore, such concerns raised the prospect that loyalty to the company was perhaps no longer absolute as it used to be, or indeed valued by the organisation as it once was, and that the traditional perception of the organisation's identity was now being challenged by a variety of internal challenges:

'That's an interesting observation....and I think you will see as well that there is probably a slightly different view of [case study organisation] with some of the younger graduates we are employing now. Now some of these guys may become 'lifers' like me, but you do see now a lot of people who want to come and work for [us] for four or five years and have [our] name on their CV because of the brand.'

(Interviewee D13)

'Some people will talk about how proud they are of [case study organisation] and how proud of the way they work which in general people are but only on a very finite little area nobody looks bigger picture, nobody looks broader, and then when they do start to do that, and these issues we have talked about start to unravel that's when they close down.'

(Interviewee E14)

'...we have gone through a lot of change recently, and I am not sure what we stand for now...I don't say that with any pride at all, I say that with great trepidation because I do care deeply about this company, it's why I've stayed here for 27 years...'

(Interviewee E17)

5.5.2.2 Belonging Challenge of Identity - Internal frame (Derby Centric)

Whilst many of the interviewees still strongly identify with the company, there was nevertheless a genuine concern expressed by some that today the identity of the company was too strongly associated with its historical past, and the legacy of its Derby plant, the 'motherhip' as many called it. Clearly, the Derby site is important to the organisation and its history of having been the location for its aeroengine manufacturing activities had been instrumental in inculcating a strong Derby identity with respect to the organisation. However, 'Derby centricity' was now seen by some interviewees as problematic, particularly considering the organisation's standing up of its Regional Centres; where the requirement for the 'motherhip' to relinquish some aspects of command and control was, in some interviewee's eyes, raising questions of structural adaptation, which was proving challenging for the organisation:

'Well structurally the problem I think is we are a Derby centric organisation, so your level of oversight and control was almost total... as a newbie coming from outside the business, I'd already dealt with regionalisation in a previous job...however, Civil is finding that very hard!'

(Interviewee A5)

'I think a lot of the tension originally came from the people in Derby who were used to doing everything; and then there was somebody else is doing a bit of the job that had previously been done in that area of the business...and some don't like that idea and haven't changed their views...'

(Interviewee D13)

'umm...In [case study organisation] although we are an international company, most people in Derby think the international line falls just outside of Derbyshire...you know it is amazing to me that they have little idea that people operate in other time zones around the world.'

(Interviewee E17)

5.5.2.3 Belonging Challenge of Identity - Internal frame (Cultural diversity)

The issue of diversity within a workforce has a long and distinguished track record, with many organisations introducing 'managing diversity' programmes, including non-traditional work initiatives such as flexitime and homeworking, parental leave, through to cultural awareness training and skills development for working in multicultural environments, all arguably with the intention of better understanding and reflecting the global nature of today's business environment. Indeed, one could

argue that the meta-narrative of servitization, together with the globalisation of marketplaces, people of diverse cultural backgrounds are being brought together both as customers and employees like never before.

One consequence that the current and future global competitiveness of the aeroengine market has brought to the fore is a realisation within manufacturing that to remain competitive requires continual access to highly skilled engineers. However, both nationally and globally such skill sets are in short supply [Daily Telegraph- The great UK engineering shortage \(2017\)](#). McKinsey (1999) noted that such shortages of crucial talent would, in their words, lead to a 'war for talent'. Today, the shortage of engineers in the UK now means that companies must compete for talent globally as opposed to relying on their traditional national talent pools as many had done in the past.

The case study organisation is one such company. As previously discussed, the company has a strong history of innovative high tech aeroengine design and manufacture, and as so often happens with a successful company there is often an equally well-established culture.

Nevertheless, despite concerns over a perceived a well-established, 'Derby-centric' view of life within the organisation, some participants felt that access to a diverse global talent pool had been beneficial to the organisation, not least in helping, in some people's eyes, to begin to influence the 'Derby centric' culture of the company:

'I think having more Europeans now working in Derby has been a change for the good to be honest... I think we are kind of moving from, how would you put it, an old, staid, heavy engineering type of company to a more...umm... fast changing, nimble, you know, business, a customer value creation driven business...yeah... having workers from the European union come in to work here in Derby, I think it is helping change the culture for the better I think.'

(Interviewee A1)

'I think it is maybe less of a job for life type company now, where in the past maybe people came in from local apprenticeships schemes, now it is much more international, and I like that. You go into the kitchen, and you hear Spanish, Italian, German... I think that is much more

dynamic environment... you are now attracting the best people from across Europe and America.

(Interviewee E18)

Yet despite acknowledgement of customer and workplace diversity by many organisations, words are not always matched by actions (Jackson, 1992). During this study the issue of cultural diversity was an interesting one, with a clear bifurcation of views. To some, diversity was something the organisation had been handling well for many years:

'...in terms of diversity, that's working well now, extremely well...'

(Interviewee B3)

'...honestly, truly, believe that [case study name] and its leaders want people of any walk of life to succeed, and if you demonstrate the ability to do that then you will be successful.'

(Interviewee E24)

But for others, diversity, despite its promotion across the company, still presented the organisation with certain challenges. The organisation's strategic approach in respect to dealing with customers lies in its network of Customer Service Centres, which aim to support all the company's customers globally; part of a strategy to further improve customer care by bringing its people closer to its customers. However, delivering such a strategy requires the organisation to enter strategic alliances which in turn has required organisational changes, such as the introduction of diverse work team, requiring the management of cultural differences, not just corporate differences, but also national ones. But as one senior manager highlighted, retaining the present 'Derby working model' would become problematic once locally recruited employees at overseas locations started to replace ex-Derby employees, then it was felt the Derby working culture could become threatened:

'...at the moment the blokes who are overseas used to be based here... so that's great, it's nice and simple... the guy I used to work alongside is now my colleague in Beijing, in Singapore, in... in Washington, or in Abu Dhabi, dead simple! Well roll forward 10 years and suddenly we are quite rightly wanting to recruit more locally, but these people will be different from the Derby raised people. Already we are starting to see across different levels of the organisation people who are not aware of their colleagues and so.... how do you have a sense of the

company, rather than a sense of your own immediate vision.... I think it is something...I think that is one of our primary challenges...how do we inculcate the [case study name] culture in none UK staff that we employ both at Derby and abroad. umm... definitely that is a challenge!

(Interviewee B4)

What the above dialogic reflects is Kindström and Kowalkowski (2014) observation that whilst a field service network close to key customers operations is an essential criterion for successful service delivery, recruiting skilled personnel to operate within them can be challenging due to scarcity of such skills, especially in remote locations and inculcating ones 'home-based organisational values' in overseas locations could be challenging.

A further interesting observation on diversity from the field study, initially highlighted by some female participants, but also supported by many of the male interviewees, concerned how some personnel viewed culture from a gender and national perspective in which the real diversity issue, in terms of identity, was that the path dependence of the company had for too long been associated as that of a 'white, British, and male' dominated institution:

'(laughter) Yeah, it's a very white, staid, male environment. For me to progress I should have left a long time ago; therefore, to have any career the only way for me is out!'... Oh Yes, but they will never admit it! You are in a male company, it's a very traditional male company, there are not many women who you will see at leadership meetings it is predominantly men and if you are there, they don't like it; they don't know what to do with you.

(Interviewee E14)

'The employee engagement survey, you know, every few years we get one, and other people may have mentioned it to you... but I find it hilarious, absolutely hilarious! We are going to ask a bunch of white, middle-class men, if they think we have got a diversity? And guess what? The answer is yes, we have got diversity!... I mean it is just like turkeys voting for Christmas!... it is hilarious! I mean the place is full of white, middle class men generally between 5'10" and 6", dark hair, they wear Navy suit, White or blue shirt... I mean they are just clones... and it is everywhere!'

(Interviewee E23)

'You look at the leadership team and the level of diversity in it, it's hard to think of any other company on the scale and size of us that is still dominated by white, middle aged males, who

come from the same part of the world! And so, our ability to think differently, be agile, is severely limited' that is one of the challenges we have got!'

(Interviewee E26)

Such views appear consistent with Du Plessis and Barkhuizen (2019) observations on the career path barriers that women engineers experience globally, concluding that the most significant psychological barrier to their development is gender discrimination.

5.5.2.4 Belonging Challenge of Identity - External Frame (Pride)

From an external frame perspective, the challenge of identity relates more to the brand and image of the organisation. As mentioned previously in this thesis when discussing pride, there was a palpable sense from participants comments, both on and off the record, that they felt a sense of pride in belonging to something with a world-class reputation and brand. Interestingly, the sense of identity was nearly always from an internal perspective; however, one interviewee noted his experience of the organisation from an external perspective was that the outside world saw the organisation not as an engineering excellence product design and manufacture company, but rather one that had moved on and was now an acknowledged leader in the integration of products and services; something which surprised him:

'The other really interesting thing is that when I'm here in [name of case study organisation], we are seen and talked about as a company that designs and makes aero engines; however, when I go to an external conference [name of case study organisation] it is always held up as the pinnacle of a services industry, and that is really interesting! There is clearly an engineering mindset pervading within the company; unless you are in services... which is after all where we make the money! That view is quite surprising because you attend these conferences and say you are from [name of case study organisation] and expect them to talk to you about the big sexy engines, but they nearly always talk about servitization, that is nearly always the first thing in people's minds, TotalCare and all that!'

(Interviewee D13)

Vince (2002) acknowledged that, "organizations are in a continuous process of becoming, rather than a stable state" (Vince 2002, pp. 1191-1192) and during this research such an observation could be arguably made of this case study organisation. Despite the organisation being praised as an

exemplar of a manufacturing success in servitization transition it was clear that the often stated end of goal of servitization - that of moving in a linear trajectory, repositioning an organisation along a product-service continuum—from product-oriented services towards a full-service organisation (Kowalkowski et al., 2015) - was not where the organisation saw itself transitioning. Rather to many of the interviewees, a more realistic assessment of the organisation's positioning would be that of embracing the multifaceted middle ground of integrating a complex product with a complex service offering. However, despite some 30 years of operations in this space, as one senior manager acknowledged the transition from product centric to product and services was far from complete:

'But what I would reflect on is that [name of case study organisation] has come from a very engineering dominated organisation, and has moved to become more of a services business that has a fantastic engineering heritage...there are a lot of people who have grown up in those ranks of the organisation, and engineering for a long time has dominated the organisation in terms of a functional power base or decision-making; that has now changed quite significantly and there has been a lot more balance in terms of, you know, the businesses and how we make money...,but are we there yet? I would have to say no!'

(Interviewee E26)

What the interviewees have elaborated on, and what Vince (2002) implicitly captured in his observation, is the dialectical challenge between participants understanding of identity both at an organisational level '*what does the organisation stands for?*' and at an individual level '*who am I?*' In this case study such tensions were played out in the various stresses and tones used by participants in describing the psychological politics at play in the conflicting discourses over individual identity, such as comments over 'engineering' verse 'service' mindsets or indeed when discussing the challenge of organisational identity, captured in statements as 'are we an "engineering company" or a "service company"'.

Such questions of identity are challenging for management and difficult to reconcile between interested parties. One could argue that organisational identity is the 'essence' of the organisation, with leaders often evoking the collective identity of an organisation as a clarion call for organisational collective and coherent response (Gioia, 1998) to perceived dangers or strategic initiatives. Yet,

individuals do not follow an organisation's identity blindly, rather as can be seen from many of the interviewees comments the portrayal of identity depends on where one sits within the organisation and on the meanings attributed to it by its members (Mujib, 2017).

In managing the integration of products and services in a complex offering to customers the case study organisation arguably recognised the need to focus on its core engineering activities in order to compete for new airframe contracts, whilst also being aware of the need to take a balanced approach between NPI and aftermarket services, in part as recognition that the majority of its revenue now comes from services, but also that it does not want to focus too much of one or the other as this could lead to what Burton et al (2015, p. 4) refers to as '*service overshoot*'.

This balancing act is about two identities i.e., engineering and services, within the organisation representing 'two sides of the same coin', and without each other the case study organisation would arguably not exist. However, managing the relationship between the two identities still remains a challenge for management, and as seen in some of the comments remains a source of conflict resulting in '*psychological politics being played out throughout the organisation*'(Mujib, 2017, p. 6).

5.5.3 Summary of Belonging challenges

Under the theme of Belonging challenges experienced here can be attributed to the complexity and plurality of the organisation and arise between the collective and the individual in terms of employee's beliefs and values which are ultimately tied up in how they see both the organisation and themselves. The challenges under this thematic node consisted of managing organisational politics, the construction and maintenance of identity both for internal and external audiences and how pride can be both garnered and lost by organisational change. Moreover, belonging is about an individuals' subjective interpretations of who they are, and how they feel they are viewed both externally and internally.

The next thematic node to be analysed is the first of the organisational tensions operating both within and between categories, that of Learning-Organising, and is discussed in the next section.

5.6 Learning-Organising Challenges

A key factor in the successful delivery of a servitization strategy resides in the effective utilisation of the knowledge gained from the interaction between customers and manufacturers (Barquet et al., 2013; Brax and Jonsson, 2009). Such knowledge can help companies tailor their products and services to fit the requirements of their customers (Matthyssens and Vandenbempt, 2010); thus, contributing to an improved value proposition based on the integration of new knowledge and skills, together with appropriate resource allocation (Kowalkowski, 2010).

Furthermore, by assimilating new knowledge and developing new skills organisations are better able to adjust to market and organisation variations and change (Smith and Lewis, 2011). Such a view is supported by servitization literature which focusses on the need for organisations to undergo both external and internal alignment as a means of adjusting to the change and variation necessary to deliver a successful servitization strategy (Neu and Brown, 2008). However, in conversations with several of the actors from the organisation the question of internal alignment was raised as a concern, with some arguing that some current processes were in effect misaligned, resulting in challenges for parts of the business.

5.6.1 Learning-Organising Challenge - Lean

To address this misalignment of processes the organisation like many manufacturers already had lean thinking established within its manufacturing areas, but as Sassanelli *et al* (2015) notes the challenge is often to inculcate Lean Thinking across the whole company. Indeed, such an exercise was being undertaken as part of the organisation's transformation initiatives; however, to some its implementation was seen as a process embedded with contradictions and its own challenges. The two observations below succinctly captured the thoughts and concerns of many of the interviewees:

"I think we have definitely been leaned too much and now we're struggling!... So, there are definite tensions I think between the kind of lean approach and how we are trying to apply lean to our business, and whether it is appropriate in the way we are trying to apply it."

(Interviewee E19)

"we have started to espouse the virtues of Lean manufacturing, not that it hasn't always been in the manufacturing part of the organisation but now it is being rolled out across the breadth of the organisation... it is that kind of thing where the engineering culture, and principles like Lean can be abused and actually lead to a certain amount of in-action... and internal tensions."

(Interviewee B9)

This initial discussion on the impact that lean thinking was having on the business led to a broader debate on alignment within the case study organisation which is now examined in more detail.

5.6.2 Learning-Organising challenge - Alignment

For the delivery of a successful servitization strategy organisations need to overcome several major challenges, none more so than the alignment of its goals, structures and processes (Oliva and Kallenberg, 2003; Oliva, Gebauer and Brann, 2012; Alghisi and Saccani, 2015). Operating within the aerospace sector, the case study organisation had successfully been delivering servitization offerings for over 30 years, so the assumption at the start of the research was that there would be little in terms of challenges in this area. However, such an assumption proved misguided as several participant's comments attest, first raising questions of structural alignment:

"yeah ... the biggest challenge that I face in my current role is the [name of case study organisation] organisational structure and the governance we have imposed on ourselves. So, in 27 years I have never actually seen the company this fragmented! ... I spend 90% of my day just trying to get [name of case study organisation] to work!"

(Interviewee E17)

"...umm... I do feel maybe as though the organisation is a little bit disconnected in a lot of areas, and I sometimes think that is because we are setup as businesses with functions... so across a kind of matrix management... I have worked in matrix management businesses before but here it is almost as if the business bit is overshadowed by the functional piece and that's where a lot of the tensions, to use your words I do feel come from; so, are we fully aligned to ultimately delivering engines?"

(Interviewee C12)

"... vertical alignment we are ok at, but horizontally not so...and it doesn't feel sometimes like we are all trying to get to the same objective".

(Interviewee C29)

Then concerns were expressed about processes alignment. Despite servitization literature extolling that success in its delivery relied on the improvement of *"touch points"* between the organisational functions as well as between customer and organisation (Baines and Lightfoot, 2013, p. 200), once again for a company prized as a benchmark of successful servitization, surprisingly there was scant acceptance that such alignment had been achieved, as the following commentaries attest:

"That's been the challenge and getting alignment across the organisation about ...err... how would you describe this?... pulling the levers over here has an effect over there ...umm.... that has been a revelation to some in the system, particularly on aftermarket... so, I think everyone's tried to do the right thing... it's just that it has taken a while to get all that aligned."

(Interviewee A5)

"Umm... I think there is another organisation challenge I guess we have, one we talked about – alignment! For a number of us still, because it is so complex, I think we are still relying a bit on what you know, do you know how to do stuff..."

(Interviewee E21)

"We haven't invested in thinking about our processes, how do we run this as an end-to-end organisation, thinking about the full consequences of the decision, being able to have the ability to do that really simply is now coming back to hurt us as a business..."

(Interviewee E26)

While alignment in general was seen by some as problematic, questions about just what needed aligning once again depended on where you were situated within the organisation, as succinctly expressed by one interviewee thus:

"So, it is always interesting because you can only answer things from, as one of my American colleagues called it, "the perspective from my knothole" where I sit in the tree, what I can see sort of thing...so issues in this company are often only seen and discussed from one perspective, i.e., from where one currently sits!"

(Interviewee D22)

So, for example, some senior management based in Derby acknowledged challenges remained in terms of aligning the various business areas and saw the solution in terms of a greater focus on standardisation. Such a view, one could argue supports Bowen, Siehl and Schneider (1989) observation, that within manufacturing there lies a cultural and cognitive bias against S-DLogic

attributes such as heterogeneity and flexibility, which can be viewed as contradictory to the more traditional manufacturing practice of standardization (Kastalli and Van Looy, 2013):

"We make our deals too bespoke, in Civil we make every single deal basically bespoke, so our ability to standardise on the system, how you support the deals, how you would do things is very difficult if you make everything individual to each customer. So, to try and satisfy the needs of the customer we offer more different elements of services none of which are standard...the problem is you can't standardise processes that are bespoke.

(Interviewee E8)

"So, we have to really look at how we standardise and make things simple, so the only way you can deliver the services well and effectively, and on time, and consistently, especially across four different regions with multiple different customers we need to have a very clear consistent way of managing that delivery...A clear view of the processes, a clear view of the accountabilities and responsibilities..."

(Interviewee B6)

For others there appeared to be a more general concern, that current processes were not fit for purpose and simply standardising a process was of little value if people don't follow it:

"All the checks and balances we now have are not effective or efficient in terms of working practices; consequently fairly simple things which you might be able to knife and fork through fairly quickly once upon a time now can be protracted and wasteful...it isn't the best way of handling business in the long-term, you need a better process control.

(Interviewee C28)

"Umm...there is a time when I used to think just get everything written down as a process, the whole thing mapped, and you have cracked it! But what that relies on is you need people to read the bloody thing, understand it and then not only that but execute it! ...so, standardisation is essential' but you also require people to learn the new processes, understand them, and then do it!"

(Interviewee E21)

However, for others, the internal tension between heterogeneity and standardisation was seen more in terms of a failure to breakout from stovepipe thinking, and rather than adopt a 'one-size fits all approach greater effort should be made to engage with the wider organisation on how to better understand and manage the coexistence of different roles and responsibilities across the business:

"Standard doesn't mean required! Standard doesn't mean Lean! Standard means we do it this way for everybody; frankly, whether they need it or not! And that is my fundamental flaw with what we are doing, it goes back to the transformation, one of the comments used is transformation is good at fixing a lot of things around [name of case study organisation] but not everyone has the same problems right! So, in many cases, I'm having to take the same medicine for a disease I don't have! That's not Lean... that's not standardising for need... but that's just standardising to standardise ... but it's actually very inefficient."

(Interviewee E17)

Building on the alignment challenge, there was concern expressed by many senior managers that whilst the organisation was good at operating and communicating vertically, the requirement of delivering complex products and services necessitated the need for greater cooperation, meaning a need for horizontal alignment across business functions. Yet such alignment was proving at best sporadic and at worst non-existent, resulting in tensions between various internal functions, as the comments below attest:

"Yeah! I would see my role as partly representing the customer ... which brings a lot of tension! Tension between groups within different product line, lot of conflict, conflict between priorities, which I think HPC has helped; but I don't think it has cured it quite frankly, so there is an interesting dynamic in the business."

(Interviewee C12)

"...some of our detailed planning doesn't necessarily expose that there are bottlenecks within the organisation ... So, I don't think we have had the robustness in the organisation in our programme management to foresee that we are all trying to go through the same 'train station', on the same day, at the same time! So, this then causes delays, overrun costs, etc. ... so somebody must go first, and somebody has to go last...but currently our communication leaves a lot to be desired!"

(Interviewee D22)

'The other thing to take away, and it is not all meant to be a negative story because we do carry on and we do make things, but fundamentally we don't work as a company together and that is something that the leadership needs to think about going forward, how do the different departments interact, because of the moment we are independent areas, and we don't interact very well...we just don't operate effectively across business areas.'

(Interviewee E8)

5.6.3 Learning-Organising Challenge: Organisational change

In general, the desire to deliver a servitized offering to customers can often present organisations with dyadic choices between competing demands. For example, the desire through organisational change for adaptation of processes and new skills that would add customer value whilst also trying to retain an ordered sense of self and purpose; in essence, the desire for capabilities to be dynamic, flexible, and agile whilst retaining the need for stability and order.

Addressing the need for the development of new capabilities according to many servitization scholars is a key challenge to be overcome if an OEM is going to adopt a servitization strategy (Baines and Lightfoot, 2009; Alghisi and Saccani, 2015; Kowalkowski, Windahl, Kindström and Gebauer, 2015; Zhang and Banerji, 2017); yet despite the organisation operating a servitization strategy for over 30 years the question of developing new capabilities was seen in some quarters as another ongoing and yet still unresolved issue.

To be successful at servitization, manufacturers need to develop capabilities to design, sell and deliver services (service capabilities), which are then integrated into '*customer-specific solutions*' (Paola et al. (2013, p. 394). Traditional engineering technical expertise is obviously still a core requirement for the case study organisation in its MRO services as well as in its design and manufacture services. However, scholars also note that for servitization traditional engineering skills need to be supplemented with a customer-orientated attitude throughout the business (see Baines et al, 2013).

Yet, despite the case study's obvious success in servitization, there remained concerns that getting people with the right technical and service skills was problematic. For some of those interviewed the failings could be traced back to basic engineering courses, where despite many young people entering the business possessing solid traditional engineering skills related to technology and products; they nevertheless tended to be rather weak on service knowledge and service capabilities (Neu and Brown, 2005). Such a challenge was expressed thus:

"...how do you get essentially a higher volume of younger people who haven't got that knowledge to execute processes properly for such a precision, you know... type product ... service offering...so, I think we will always need top-class engineers', that goes without saying, and a focus

on transformation in engineering, so developing standards all the time, creating more efficient ways of doing things is a key skill that I think we need to bring in so not just doing the same thing but doing it better, or cheaply. But also as you said, we also need people with the skill sets that can understand value creation and can help the business deliver value through the services side of things, aftermarket support if you like, customer support...now that is a challenge!"

(Interviewee A1)

Arguably, organisational challenges like that highlighted above can result in questions concerning the fundamental zeitgeist of a manufacturing organisation as any organisational change can be conveyed in terms of the interpretive schemes of organisation members (Gioia and Thomas, 1996). One of the first observations made by the researcher early in the data collection phase concerned participants views on staff longevity, with length of service paradoxically represented as both beneficial and detrimental in relation to change initiatives. Many long-term employees can be said to hold the corporate memory of both explicit and implicit actions and consequences of previous change initiatives and arguably if they were to engage fully in any further change programmes would be seeking signs of organisational learning from previous change projects; but as one participant captured the mood of many interviewees there was a feeling of frustration that lessons perhaps had not been learnt:

"I think we actually fixed a number of these issues 10 years ago and now with the most recent transformation changes we have basically brought them back in again unknowingly, I'm sure."

(Interviewee E17)

For the majority of those interviewed they had spent their entire career within the same organisation and now hold positions of considerable authority. Their longevity with the organisation had seen many of them involved a variety of change initiatives during their time, but perhaps due to previous leadership styles and power dynamics only now felt confident that their position within the organisation meant they had a voice that should be listened to:

"It is ironic as you say that it has taken me over 16 years to build the confidence, and indeed experience, to start asking the right questions and challenge procedures!"

(Interviewee D22)

However, for some the battle to be heard was perhaps one battle to many, one change initiative too far. Some of the interviewees expressed frustration in that 'they had seen it all before' and were showing signs of change fatigue, with some even showing total disassociation with the current transformation change programme. The challenge such apathy presents to an organisation is that in failing to address such concerns may enable them to fester and generate a viable counterculture to any future change initiatives:

'I don't think the company has changed a lot... I don't think I have seen what you might call a significant change taking place rather a more gradual one.... Nothing that you would call dynamic change; in fact, thinking on it in some areas I believe we have gone backwards more than forwards!'

(Interviewee E14)

'(Long pause) one of the advantages of living in the same company for 24 years is that you've seen many of these things before ... and I'm err... somewhat scarred! Whether we will follow through on our commitment to do that (Transformation).....I'm not sure? I don't know if people have the fight for more change...we've seen and heard it all before! I have a lot of faith in SOME of the senior leaders who are committed to it, but I've seen so many fail, and I'm somewhat sceptical. Let's say I'm cautiously optimistic and leave it at that (laugh).

(Interviewee A5)

"Back to your question is transformation trying to address it? If I am really frank, the headlines and marketing say that it is... but I think in a day-to-day practical reality I don't think it is... I don't see any change! So, in a previous transformation ...and yes this is not the first attempt to sort out [name of case study organisation] issues!... so, if I go back to the fourth one! ...yes, four back from the current one! ...it feels that this time round with the transformation... that it screams to me this is all about cost-cutting, not process improvement!"

(Interviewee E23)

From the organisation's internal literature to its annual reports it had attempted to communicate its people strategy and approach in terms of creating a lean, agile, high performance culture where the workforce could feel enabled, engaged and energised to drive performance and growth; however, dialogues such as those presented above question its success. Buschmeyer, Schuh and Wentzel (2016) noted when dealing with organisational transformation management often underestimate not only its complexity, but also the management challenges required in delivering the behavioural changes necessary for an organisation to achieve a sustained high-performance.

Considering the comments expressed, operationalising change initiatives for many participants was becoming more difficult as the organisation's continual engagement of some form of change was inducing cognitive disorder in some managers as they struggle with shifting organisational expectations. The result of which was often a somewhat sceptical outlook presented to the researcher with respect to the chances of success for the current transformation change initiatives.

Such views of change exhaustion are not uncommon, Bernerth, Walker and Harris (2011) note that when organisations engage in a continuous state of change initiatives, such actions can deplete employees adaptive resources, often reaching a 'saturation' effect (Marks, 2002).

Whilst it is acknowledged that servitization success demands that companies be innovative, flexible, and responsive to changing customer demands, paradoxically it also requires organisations to perform reliably and consistently. Such dualistic tension arguably pervades all change initiatives and is a central paradox within the learning/organising theme. Therefore, addressing such competing demands needs to become an objective for the organisation, as failure to act could enable such interpretations to take hold and become a counterculture, one resistant to the values and goals being extolled by the organisation, and by default, could become factors in resisting further organisational change (Lüscher and Lewis, 2008).

5.6.4 Summary of Learning-Organising challenges

The challenges and organisational tensions experienced under the thematic node of learning-organising are summarised as the dualistic conflicts between the desire for change and agility whilst retaining a desire for efficiency (Smith and Lewis, 2011). Clearly servitization offers firms the ability through closer cooperation with customers to provide tailored offerings but utilisation of such knowledge requires organisation to be aligned in terms of structures, processes, and goals. However, this analysis questions the veracity of this statement in respect of the case study organisation highlighting many such challenges remains unresolved. Furthermore, the desire for dynamic capabilities somewhat jars with the desire for stabilised routines (Teece and Pisano, 1994) and the introduction of lean as a 'standardisation tool' was seen by some as a process not necessarily suitable

for certain service led activities. Such concerns had enveloped the transformational change programme and in certain quarters it was apparent that change fatigue was setting in.

One way to alleviate change fatigue is through the development of behavioural tools that enable personnel to feel engaged and empowered across change initiatives; thus, helping establish and sustain the right behaviours necessary to sustain a high-performance culture. In the case study, such behavioural tools were being rolled out as part of the transformation programme and are discussed in the next theme - Learning-Belonging.

5.7 Learning-Belonging challenges

Smith and Lewis (2011) represent the organisational challenges under learning-belonging as dualistic conflicts between the '*need for change and the desire to retain a sense of self*' (ibid, 2011, p. 384). For any organisation to sustain long-term success with a servitization strategy requires the capacity to both develop and deliver quality products and services; yet despite the current zeitgeist for servitization advocated in much of the literature, many firms struggle to achieve the suggested benefits, and in some widely documented cases have completely failed to achieve servitization (Brax, 2005; Benedettini, Neely and Swink, 2015). One reason cited for this failure is an organisation's inability to shift to and sustain a high-performance culture (HPC) (Kaliprasad, 2006). Within the organisation researched such a perspective is now assessed.

5.7.1 High-performance culture (HPC)

The drive to learn how to sustain the behavioural characteristics necessary to deliver a high-performing culture was a central goal of the case study organisation (see Case Study Annual Report - 2016, p. 43). As part of its Transformation programme the flagship cultural change programme was rolled out across the organisation with the goal of providing insight and tools to enable staff to better collaborate across business functions.

Its development and deployment were one area where the adoption and learning of a new skill could tangibly be seen to have benefits, where its implementation and use received many favourable plaudits from participants. Indeed, many of those interviewed saw the use of HPC tools as not only key to improving communication around the organisation, but offered people at last a mechanism to speak out without fear of sensor; it gave them a voice, and as such a sense of belonging to an organisation in which they could actively engage and be heard:

"...funny enough the best bit of training I think we have done recently has been the culture training to achieve this high performance culture (HPC) that we now talk about because in a very, very complex world it's giving us some terminology and some shortcut phrases, and some nonthreatening phrases that allow you to talk about some of the difficult things we face...I suppose then HPC allows you to have conversations with people you wouldn't normally conversed with....."

(Interviewee B4)

"So, I don't know how much you had been told about the High-Performance Culture coaching that we do... So, a little bit similar to the seven principles of Lean, we also have some principles which are defined under high-performance culture, which have had the most profound effect on [name of case study organisation] of any type of training I think that I have certainly seen in [name of case study organisation] and arguably anywhere!"

(Interviewee B9)

thus, making people feel more empowered:

'Definitely, HPC as a concept has given people a common language in the business so that you can go and have conversations that could be quite difficult but in a way that people don't think it is personal or that you are attacking them when you raise an issue so you go up to someone and say, "I think we have a 'broken squares' situation here because you have lots of resources and I have got a burning platform here, it is really hurting the customer, can we find a way to rebalance this" in a way that you are not attacking the person you are attacking the problem. So, it has effectively given us a common language...'

(Interviewee E26)

However, whilst the general tenure from participants was positive for this initiative, there was also a growing concern that its initial purpose to support a cultural change was now becoming less effective. To some, the initial optimism surrounding HPC was perhaps, inevitably, after a few years of implementation now waning with personnel no longer on message, and some actually questioning its affect on management behaviours:

"... Yes, it sounds a bit cynical, but we are going through a massive culture change in [name of case study organisation], high performance culture is how we badged it, you know everybody is talking it in every area of [name of case study organisation], and sometimes it feels as if it is a little bit...umm... tokenism in the language that we use rather than we are really changing the culture."

(Interviewee D13)

Umm... I think one of the challenges with HPC, and I have heard it called "Happy Performance Culture" because people feel it is a way that you have to be polite, so it is a way to be polite to someone... I do and have seen how people say; "how HPC were we today?" and what they mean is was I polite to people, did I coach, did I say "that is really good" and things like that, rather than gave them some really good feedback on what they came to see me about, or helped them solve a problem, or gave them some guidance...!'

(Interviewee E26)

"Another frustrating thing about this business now after the establishment of HPC throughout the business is that everybody believes they now know how to fix your problem, even though they probably have got no functional or previous experience of it...yeah! There is quite a lot of that! Everyone has an opinion! We often call it MOGI...the Ministry of Good Ideas! (laughter)..."

(Interviewee E21)

5.7.2 Summary of Learning-Belonging challenges

The development of a high-performance culture is an aspiration for many organisations and in the analysis of the case study organisation a HPC mechanism had been put in place to engage staffs both in conversation and decision-making that had in general been well received. Ultimately, the path to a high-performing culture is about nurturing a better work environment where personnel feel free to do their jobs and yet contribute to their processes in a positive and supportive environment; however, establishing HPC is more than just moving an organisation to a position where it is agile and responsive to market needs, it requires management to remain responsive to ensuring the sustainment of behaviours that enable such objectives to be met. HPCs value in achieving this goal can be described from participants' comments as a tool that allows people to do their jobs in a reassuring and safe environment whilst offering mechanisms for communicating any anxieties (Kaliprasad, 2006).

The next intra-organisational structural tensions to be explored relate to the challenges of Belonging-Performing. These are discussed in the following sub-section.

5.8 Belonging/Performing Challenges

Under the theme of Belonging/Performing the challenges presented here refer to the perceived distinct and contrasting identities within the mindsets of personnel within the case study organisation and the perennial manufacturing debate of where value lies, products or services?

Extolled across much of the servitization literature is the proposition that successful servitization requires inculcating a change of mindset in employees away from products to service-led strategies (Gebauer et al., 2012; Ulaga and Loveland, 2014), with the emphasis on '*a mix of tangible products and intangible services designed and combined so that they are capable of fulfilling final customer needs*' (Tukker and Tischner, 2006, p. 1552).

Accordingly, where organisational value resides should be irrelevant. However, throughout much of the discourse conducted in this research how organisational members negotiated issues around organisational challenges was often foreground from the perspective of 'where' and 'how' they identified themselves in terms of the organisational context. This question of identity was interestingly captured by participants use of what many presented as two divergent collective identities: 'shiny toys' (i.e., NPI and manufacturing) and 'aftermarket'. These entities were presented as having distinct identities, values, and sometimes conflicting goals with one another. This tension between both identities is discussed next.

5.8.1 Belonging/Performance Challenge - 'Shiny Toys'

During the interviews a clear dichotomy emerged within the engineering fraternity between those parts of the organisation said to be at the cutting edge of NPI and those generating revenue through aftermarket activities:

'Umm...that is an interesting and challenging question. I think there is a...oh where do I start with this one! This could be a thesis itself I think (laughter)... it feels to me like we have a bit of a two-tier sort of system in place at the moment...manufacturing and services!'

(Interviewee E23)

'Umm...unfortunately in our company we've got at least a double-headed beast. We've got one beast called 'new product development' and another one called 'aftermarket!'

(Interviewee A5)

Whilst some recognised the reality of the drive for NPI growth, and indeed manufacturing's historical position within the company in comparison to aftermarket:

'There is, there is a lot of tension between NPI and aftermarket...it doesn't quite feel right saying that!... Umm...but it has always been like that!... so, it has always been like that, I just think it is on a bigger scale now isn't it because there are more NPI programmes.....right now it feels, and from what I observe from actions, that all the focus is on NPI.'

(Interviewee E21)

'...So, yeah, the focus is on the shiny toys because that is where the growth is coming from. So, getting those shiny toys into service, mature, working, getting those deals locked down, there is a huge amount of publicity I would say and a kind of hurrah around that side of things.'

(Interviewee E19)

For others, there was umbrage that the focus of the organisation was too much on NPI at the expense of recognising that those personnel working in the 'aftermarket' arena, which many were at pains to point out was where most of the organisation's revenue was being generated:

'Sometimes you do feel underwhelmed at times. If you think about it the engines are sold let's, say, it goes on the wing, everybody stands around, ribbons are cut, that's it, job done, and engineers will tell you that's another one delivered. But it hasn't made any money at all at that point!'

(Interviewee C29)

'There is a predisposition in this organisation around production or NPI...so we were at a ... conference a couple of days ago, and [name of board member] had one a few weeks ago and there will always be videos...you know you have these adrenalin videos of everything flying and so on and getting everybody's energy levels up ...but it will all be about this order was won, this aircraft is going into service, and this product in testing is doing really well, but there is very little around the aftermarket side of things; yet that is the bit where the money is coming from!'

(Interviewee E19)

One key disquiet that emerged during discussions revolved around access to resources, with some interviewees perceiving an unfair advantage given to the 'shiny' toys business, who despite supposedly working to an agreed project resource planning methodology could almost at will take resources from the 'aftermarket' business with scant regard to the implications. This rob 'Peter to pay Paul' approach was frustrating to many and clearly finding the right resource balance was challenging:

'So, the first dichotomy of balance is how much do I invest in the current flying fleet, and do I keep that stable or use all my resources on the shiny toy because that is jam tomorrow it's my future...but that tension, that healthy tension, that exists across the engineering community about where the relative balance and weight that we put engineering support to, is absolutely a challenge!'

(Interviewee A5)

'So, the biggest tension I see is in allocation of engineering resource. The allocation of people to do the work, so with all the NPI programmes we have got going on we tend to push all are people towards that and the fleet programmes get what is left and we are left in the difficult space of having to manage failing a commitment to customers and things like that, or net solutions not being right first time, and various other things so that is the biggest tension I see.'

(Interviewee E15)

However, like some other themes that have emerged from the analysis of the data, the position and function one occupied in the organisation played an important part in shaping opinions. Yet, in fairness, for those few senior interviewees who had worked both in NPI and the 'aftermarket' that *lebenswelt* perhaps helped them shape a more 'worldview' acceptance of the situation:

'So, maybe I have a bit more of a balanced view through my experiences, but wherever you sit along that journey you just have to make the best that you can with the resources and the capabilities that you've got!... I think if you had only ever worked in aftermarket, you know if you spent the vast amount of your career, you might feel like you are always coming out as second fiddle...'

(Interviewee D22)

What was interesting in much of the discourse regarding 'shiny toys' and aftermarket functions was that despite extant literature supporting the position that NPI helps manufacturers in building desirable integrated product-service offerings (see for example, Ulaga and Reinartz, 2011; Burton, et al., 2015), there remained, surprisingly for such a noted exemplar of servitization success,

considerable tension within the organisation between the two fractions, tensions that were at time raw and hinted at an organisation despite academic plaudits, still struggling with a clash of identities and goals, what scholars refer to as a paradoxical tension inherent in employee identity, namely, the similarity-distinctiveness tension that is said to be foundational to individual identity construction (Brewer, 1991; Cuganesan, 2017). Such a tension can be seen to exist in this study:

'Tensions between 'Services' and 'Shiny' toys.... (laughter)...oh yes! ... oh yes! There certainly is! It's not that they're bad people it's just that never been exposed to it [services], they have no idea of the whole process!...So is...is there a tension between the guys in the shiny toys department... absolutely! they are all great people, they all want to do the right thing for [the business], but they don't have the first foggy idea of what really happens to that product that they just designed!'

(Interviewee E17)

5.8.2 Summary of Belonging-Performing challenges

Smith and Lewis (2011, p. 384) present belonging-performing challenges as arising from '*when identity and goals clash*', where individuals struggle negotiating a self-identity with either social or occupational demands. From the analysis of participants discourse there is a strong belief that work identities, in particular, are strongly tied to occupational activities (Caza, Vough and Puranik, 2018).

Whilst much of the servitization literature extolls the virtue of a mindset change to one of a more service-led perspective, historical and institutional culture inevitably shape identities and despite the case study organisation's success at servitization, there resided still a strong dichotomy between those engaged in the traditional manufacturing practices and those delivering services.

Why is this important? Well, how people identify themselves at work has implications for the organisation they are embedded within, for in shaping their own identity individuals also shape the identity of the organisation (ibid, p. 230) consequently how organisations juxtapose such conflicting identities could affect how customers perceive the organisation. Moreover, during times of scarcity and organisational turbulence such identity dynamics could have a disruptive influence for when

employees feel threatened, anxious, or insecure, strategies of self-identification could generate cynicism and resistance (Gotsi et al., 2010) to ongoing strategic change programme.

The next thematic node to be examined concerns the inter-organisational challenges and tensions captured under the heading of performing/organising and discussed next.

5.9 Performing/Organising Challenges

Under performing/organising challenges the analysis of the data hinted at four specific challenges: Business models, scalability, resources, and time horizons. These are examined in turn below.

5.9.1 Performing/Organising Challenge – Business Case

Throughout much of the servitization literature there is acknowledgement by many scholars that the transition from a product-centric business to one delivering a servitization strategy is a complex undertaking. Whilst the provision of a servitization strategy is now a '*conscious and explicit strategy*' for many business (Smith, 2013, p. 988), it has had mixed success. Some scholars have noted financial or positive success in developing a servitization strategy (Oliva and Kallenberg, 2003; Davies, 2004; Gebauer, Edvardsson and Bjurko, 2010). Conversely, others have indicated a less than positive outcome (Gebauer, Fleisch and Friedli, 2005; Fang, Palmatier and Steenkamp, 2008; Neely, 2008; Kohtamäki et al., 2013).

In terms of the aerospace sector, OEMs business models have traditionally always provided some sort of services to its customers, normally under the description of a 'time and material' model in which the manufacturer provides routine maintenance to ensure the upkeep of the product, charging customers for the amount of hours spent on the OE, plus costs of material used (Bowen, Siehl and Schneider, 1989; Johnstone, Dainty and Wilkinson, 2009; Baines and Lightfoot, 2013). However, with the introduction first of 'power by the hour' and later 'TotalCare', the case study organisation's business model can be better understood as one that is no longer defined by the traditional physical exchange and sale of an engine (Johnstone, Dainty and Wilkinson, 2009), but rather by non-financial metrics such as the promise of providing the assets availability to support the customers core business objectives.

Whilst the case study organisation offers a number of service offerings it is perhaps best known for its 'advanced services' (Baines, Lightfoot and Smart, 2011; Baines, Lightfoot and Smart, 2013; Baines and Lightfoot, 2013) presented under the banner of 'TotalCare'. Under a TotalCare contract customers can select from a virtual TotalCare store a range of packages that guarantee aftermarket services on an

agreed scale of costs per flight. Accordingly, the aim of the organisation's business model is for the customer to buy capability rather than just the product, a capability for which the organisation can charge a premium price. However, adoption of such a business model also requires the organisation to assume a higher tolerance of risk and responsibility (Parida et al., 2014).

Grönroos (2006, 2008) argued that today's firms compete not based on products, but rather on services, yet despite such opinions being widely accepted in academia and business, within the case study organisation some of those interviewed, arguably with a strong production heritage, who despite their senior positions within the company and the much-vaunted success of the organisation, still retained a product-centric view of the business and struggled to accept where the value proposition now lay:

'It seems to a novice like me that it is an interesting business model in that the sale of the engine drives the business and yet where the profit appears to be generated from is from the service offering not the product.'

(Interviewee A10)

So, it's a huge challenge to continue as we have, as knowledge shifts into electrical and digital, throughout the company, and we have a massive service business on the back of that. We are a product-based service business, so by now the business model is that the product has to have a big service element to it. But that said it's still a massive challenge for us, I think for us to understand how to scope and invest in that, as well as understand where the value now lies...is difficult for many to adjust too!

(Interviewee B3)

For others, surprisingly, a traditional product-centric attitude was still present by dint that the importance of services was portrayed as a '*necessary evil*' (Reinartz and Ulaga, 2008, p. 20) compounded by the failure of the revenue business model to assign the core product a respectable price:

'...we like service because it gives us money, revenue, it's where the profit is because the business model is not good! If we just sold an engine for a good price and made a reasonable profit, and yes obviously gave it some service or allowed other people to service it, I don't think we would be nearly as worried about the service company side of it, but because we are where we are, so services are critical to our whole revenue stream and our ability to reinvest'

(Interviewee B27)

If a business model can be said to represent the heuristic logic by which a firm creates value (Nair et al., 2013) and the connection between a firm's realisation of that economic value (Chesbrough, 2002), as well as the mechanisms by which it intends to capture the value from its offerings, then concerns from many of those interviewed seemed to be concentrated on capturing that value. Whilst services were seen as the cash cow for the business, the reliance on revenue generated by services seemed to be at the expense of the product, despite the millions spent designing and manufacturing it. This appears to highlight that the current business model presents an immediate challenge in terms of cash flow, a point conceded by some of those interviewed:

'...there are requirements from the 'City' that you need to be cash generative and we aren't making cash at the moment!'...also we sometimes giveaway {engines} as part of the deal anyway depending on who it is... and we now have contracts where we never make a penny over the whole life of the contract... we have engine programmes where we don't make a penny over the life of the program now, that is the whole engine programme!'

(Interviewee E14)

'...at the moment ... where I work in the aerospace business there is the constant demand for cash!... That is predominantly driven by our business model, which is sell the engines at cost price, or just below or hopefully just above, and then wait for the long-term aftermarket revenues to come in. ... this is why I say the cash focus is key, because it is being driven by this model where we are selling engines at such a large discount upfront in the hope we make the revenue back through our TotalCare aftermarket services ...it is putting huge pressure on our business model!'

(Interviewee C16)

'I think [the problem] is also partly driven by a disconnect in the business models of engine OEMs and aircraft OEMs. So, aircraft OEMs make all their money on the nose, on the sale of the aircraft, whereas we don't. We are lucky if we make any money in terms of the engines ... and certainly with derivatives which seem to be the norm of the industry, re-engineering aircraft ... that business model doesn't work!'

(Interviewee E15)

These concerns over the business case's reality also extended to the organisation's much vaunted TotalCare offerings. In conversation with many personnel within the organisation there appeared to be a tension between managing changing customer demands and delivering steady revenue for the business, in essence, a tension between the current business model and the model of the business.

Even the business model of TotalCare and its long-term lock-in of customers was seen by some as mechanistic, unwieldy, and unrealistic in meeting today's cash needs of the business. Instead, what many participants hinted at was a more agile business model to meet the changing pricing expectations of customers and environmental challenges:

'Umm... interesting! In terms of the business plan...I would probably say it is more mechanistic to be honest! I think ... umm... we have been of a bit of a journey over the past few years of trying to make it into something that is agile, that we can flex and change, but I think it is still felt, and the corporate process almost drives it being a mechanistic type of approach.'

(Interviewee C26)

'So your aftermarket is continually being eroded by customers coming in for discounts, because they are trying to make money as well... so again what you thought was an agreement for 15 years, if you want to keep your engines flying and use the product, you negotiate or you pay the risk of them passing the engines onto someone else... so the aftermarket, the services stream that is supposed to be profitable part of the business model is consistently being eroded. So, if you don't make money in the front, you're getting less and less money at the back so the whole business case slowly unwrapping.'

(Interviewee E8)

5.9.2 Performing/Organising Challenge – Scalability

Over the last 30 years the case study organisation has grown considerably within the aeroengine sector, moving to number one in terms of wide-body aircraft, a point of pride for many as captured in the following comment:

'Well, I think... umm... in the airlines business we are a much different company now than what we were ten or fifteen years ago. We are now a big player! We are now a sizeable player by any measure in the airlines businesses, and certainly in the wide body market, and in the wide body bit of that market we are a world leader!'

(Interviewee C28)

As already noted, one of the challenges expressed over the business case was its perceived lack of agility, with many interviewees arguing that the ability to respond to changing requirements rapidly is essential to managing market and customer expectations. One of the most effective capabilities to achieve this rests with the organisation's dispersed service infrastructure sites, their CSCs. Thus,

appropriate scaling of their service infrastructure was promoted as critical if their strategy of being close enough to their customers to deliver a continuity of service over a large geographical area was to be successful (Salonen, 2011; Storbacka, 2011; Storbacka et al., 2013; Story et al., 2017):

'So, we must deliver what we have committed to and that has challenges because the way we have spooled up in size, the actual numbers of aircraft, the number of engines we are having to deliver, the sheer number of operators we are having to support.'

(Interviewee C28)

The challenge for tomorrow, in my part of the world, is that we will have three times as many engines that need to be serviced every year, so we are busy just now building up new overhaul base capabilities and developing partnerships with new people to carry out all that maintenance on the engines.

(Interviewee D13)

However, research by Shankar, Berry and Dotzel (2009) highlight that in the delivery of an integrated product and services offering a key stumbling block for many organisations has been their failure to effectively scale up to meet customer demands. The challenge of scaling-up in this research was not just related to scaling up CSCs to meet demands, but also referred to activities at Derby, both in terms of facilities and resources, raising concerns among some interviewees as to whether the organisation was correctly configured to respond to meet its growth drive:

'So, these are some of the challenges around the difference in the scale of our aftermarket, such as its going to be...umm... I keep coming back too, we are going to produce around 400 engines this year, in the large engine space; we will overhaul or perform some form maintenance on around about 700. So...so the aftermarket is now large...But there are more maintenance activities than there are build activities going on and we need to appropriately scale-up to meet this growing demand.'

(Interviewee C2)

The question of scale in terms of costs, infrastructure and in systems, as raised above, was a point further pressed home by some senior managers who saw the inefficiencies highlighted in the previous interviewees comments being directly related to the internal failings within the company in their management of the drive for growth. These failings ranged from a perceived lack of technical competences within some parts of the engineering community, the inability to reach the required scale

for an activity, such as with Test Beds, and perhaps a failing of the internal processes which are inhibiting effective and efficiently product-service delivery; all contributing to increased costs:

'Umm... our scale, gives us lots of challenges around...umm... our cost lines are far too high and internal inefficiencies absolutely get in the way. Whether that is in terms of the way we make our products... it is the balance between being efficient, being right first time whether that is in the way that you make a part, what you provide for the customer, we have got lots of waste in our processes! Waste in the way that we do stuff, and we carry the cost of that all the time so, I don't know is it diseconomies of scale.'

(Interviewee E23)

'...we are not scaling up the company quick enough to manage the growth...both infrastructure and personnel... infrastructure wise we've just realised that we make our own turbine blades, for example, you will see a turbine blades facility on the site which is fine at the moment, but for some reason somebody has made a miscalculation in the forecast and didn't take into account the fact that we need turbine blades for aftermarket as well as OE and now we don't have the scale to meet the aftermarket requirement! So, we now need £350M to build a new facility quickly to upscale because somebody made a miscalculation in the forecast. ... (laughter) ... so now we are really struggling with that ramp up because it seems we don't have the appropriate test bed capacity so when we make an engine, we can't get it on the test quick enough or engines are failing on test... Yeah, so scale is a key challenge...'

(Interviewee E8)

5.9.3 Performing/Organising Challenge – Resource Issues

Throughout the period of the data gathering the researcher was cognisant of the fact that the organisation was undergoing a significant transformation programme. Whilst the programme sought to improve ways of working, as well as alignment and processes, part of the rationale for the programme was also to alleviate costs. The desire to reduce unit costs in terms of NPI costs has been covered already in this thesis, but another unit cost element related too that of personnel costs. During the period of this data gathering the organisation had made a considerable reduction of senior management positions across the organisation through compulsory redundancy.

Despite previous change programmes and restricting activities that had occurred across the business, there was a feeling that the previous reductions in staff headcount didn't address the issue sufficiently;

thus, some interviewees saw the present senior management redundancies as addressing a long overdue organisational failing:

'yes, there was fat to be lost, I don't think that was ever in question, especially at middle management. When you looked at how many...I can't remember who...someone had a statistic that said about 40-50% of [name of case study organisation] managers had zero people reporting into them, which is a crazy place to be in. So, it was right that they were cut.'

(Interviewee C16)

'I think step one last year to takeout senior management and management headcount, I genuinely think that was the right thing to do! We definitely had too many people procrastinating and debating things and not getting on managing things. I think if you've got fewer people managing the business then they haven't got the time to sit and procrastinate, they are going to have to get on and deliver things are bit more.'

(Interviewee E20)

Indeed, one or two interviewees felt the current round of cuts didn't go deep enough; although in fairness, as the following interviewee confesses, such views were not universally shared:

'In fact, I probably think we could cut a few more out still; although I think I would be in the minority to say that point! But I don't think that at the management and senior management level we've gone too far... so, yeah, I do! I think we could lose a few more...'

(Interviewee E20)

What was interesting from a research perspective was the dichotomy of views expressed by participants when asked about their personal evaluation of the impact headcount reduction was having on the business. As previously noted, many of the participants were, by their own words, 'lifers' with the case study organisation, and for some of them the loss of such a swathe of senior management was challenging them on a very personal level, and causing some to reassess their beliefs of what it meant to be an employee of the case study organisation:

It has felt particularly painful in this latest transformation that we have gone through in my opinion. I mean my project director at the time was gone the next day! Now that might have been the right thing as she wasn't particularly great in the role, but it was quite unsettling at the time, and our chief engineer was moved...we had awful lot of churn which was unsettling...not how I thought [case study organisation] did business!

(Interviewee E19)

'I suppose the bit I find myself questioning is... I just don't know if I fit any more! Many activities now I believe are challenging my core beliefs...'

(Interviewee E23)

Whilst some choose to see the redundancies from a highly personal perspective others choose to see the challenge it imposed on the organisation from the perspective of whether the loss of such experience would be detrimental to organisational current and future performance. Here the divergence of opinions was marked, with some supporting the current leadership's action and their 'direction of travel':

'[The CEO] is trying to do two things: he calls them hardware and software. Hardware is the people, software, certainly to his mind, is more difficult but more valuable, so you know standardising processes, getting better tools, getting economies of scale, all that stuff he is more on board with than his predecessors, and so we concentrated very much on the hardware component but then didn't match up with the software component and from his background he is very much in that space.'

(Interviewee A10)

'Since the new CEO has come in its been pretty much a top-down reduction in senior management. So, over the last year we took 25% out the senior management population... Which is a lot of experience, but it is also in his drive to get accountability it has helped quite a lot. So, obviously there is now fewer senior managers which has forced us to be clearer about who does what, and what value each person provides. So, we've had a lot of central people for some considerable time... umm, providing umm.... yeah... I need to choose these words carefully.....the benefit of their years of experience but not directly aligned to achieving output!'

(Interviewee A5)

Additionally, as some pointed out, the large number of middle management redundancies were long overdue as there was too much non-valued activity within the business and their loss would not constitute a loss of key skills or the genesis behind any long-term reduction in organisational performance:

'So, yes there was fat to be lost, I don't think that was ever in question, especially at middle management. When you looked at how many... I can't remember who... someone had a statistic that said about 40-50% of [name of case study organisation] managers had zero people

reporting into them, which is a crazy place to be in. So, it was right that they were cut... it was absolutely the right thing to do, and it should've been done sooner.'

(Interviewee C16)

'So, whilst there was a huge amount of experience lost, if you look at the number of people at the time served by those people, the organisation didn't collapse around us...umm... we still grew in that period, we still won orders in that period...but actually I did believe that there were pockets of the organisation that were inherently lazy by nature, lazy by culture and so we can all sit here and criticise other parts of the organisation, but every now and then a cull of that nature, I think actually can sometimes be a good thing!'

(Interviewee E24)

However, for others such optimism was mooted, with one participant acknowledging that whilst in principle he agreed that the need to reduce the headcount was correct, he nevertheless felt that the manner of its implementation was problematic, and was concerned that in his department specifically, he had lost too many high-quality staff which in the short-term was frustrating:

'So, the activity was worthwhile doing and the desire to want to strip out headcount, let's call it headcount, in the few instances was sound, but did you lose the wrong people? That is what frustrates me more! I think we probably did lose many really, really good people perhaps more so than others.'

(Interviewee E24)

Others also expressed views that headcount reductions were simply a short-term solution to market pressures to reduce costs. What was of more concern, and contrary some views already expressed, was that the losses of such operant resources could be a significant factor in a possible conjunctural causality in the longer-term: a loss of capability:

'So, when we cut a few commercial heads and squashed a few grades last year, in my opinion what we were really doing was just squashing some of your capability and the ability to get work done!'

(Interviewee E25)

'But in engineering what you don't recognise is there are very good people, incredibly knowledgeable and that's not the management knowledge I'm talking about, I'm talking about engineering knowledge which is something that takes generations to attain. That is where I am slightly concerned and that is where I will be interested to see, have we have cut too fast and too deep in that space.'

(Interviewee C16)

Away from the direct impact the transformation programme was having on headcount numbers, interviewees also expressed concern over the management of extant resources and the perceived historical praxis of not challenging the organisation for additional resources:

'...I think that the effects of cutting costs over a long period of time have meant that they [senior management who have only ever worked within the case study organisation] have felt that they can't ask for the right amount of resources. So, the general, and I wouldn't wish to be critical of this, but the culture here is one where people have learnt over a long period of time that headcount is flat to down; so therefore, they stop challenging the system...

(Interviewee B9)

Interestingly, during the interviews a few senior staffs, across both projects and aftermarkets, presented the allocation of resources in terms of a 'win-lose' competition between themselves and NPI, once again identifying a tension between the fractions:

'[In aftermarket] we end up being treated like an overhead ultimately, it becomes an overhead because you are not a direct cost, because if you are designing an engine product everything in the service environment effectively becomes an overhead, and that isn't the right way to have us portrayed!

(Interviewee E18)

'Where we generally find ourselves competing with each other is basically around load capacity... so a lot of our debates around how we allocate resource.

(Interviewee A1)

This frustration with resource planning was also evident with personnel working in the services area. Here, resource conflictions centred around not having enough resources to meet the growth of customers and their demands. This was exacerbated by the difficult of explaining to the business the nature of their workload. For unlike engineering whose workload is based on a load schedule and thus resources can be allocated against that schedule, those engaged on the customer side of the business have a much more reactive relationship to tasks which defies rigid scheduling. This tension of resource identification and allocation would also seem to present supporting evidence of an engineering mindset still being the dominant logic within the organisation:

'Yeah, well we don't have [a load plan]... certainly.... I'm sure they do in engineering, although I've never seen how they apply it... But on the customer side now, we have no ability to record

task or whatever. Load planning does not exist because we have no record of load... I think partly the problem on the customer side is it is just very difficult to try and quantify and specify exactly what you are doing at the end of the day, end of a week or even in a month's time, because you are responding to customers' needs and you're responding a lot to unplanned technical issues that have arisen, and that by the very issue that its new means we haven't been able to plan for it.... So, whilst we know what we do, whilst you can look into our diaries and see the level of standard meetings we might have, ad hoc meetings we might have, customer visits we might have, we still find it very hard at the moment to know how to plan. Everyone has raised it, 'wouldn't it be great if we could really properly plan, quantify the load across the regions, and how that load across the regions relates to people in Moor Lane on engineering of accessories, or people in the MRO team or whatever'. However, at the moment, that certainly doesn't happen in the customer teams' site'

(Interviewee B6)

The challenge of allocating appropriate resource to task within services has already been highlighted in this section, and with the growth in customers, and the organisational drive for more, management was already balancing a fine line in maintaining operational performance on the one hand and managing the welfare of overworked staff. This challenge seemed particularly acute across many service functions. As one senior manager confided in me the resourcing challenge was now his number one issue and his frustration was self-evident as the following conversation shows:

'So, the more customers therefore the more contracts [my staff] have had to manage. They are working a lot of hours; I have an overtime Monitor spreadsheet where I keep an eye on it and the average overtime level on my team at the minute is running in excess of 20%! In the Middle East and Africa, it is more like 35-40% at the moment!... that cannot be sustainable!... people don't just sit here and do six days' worth of work instead of five every week because they want to... the team are really overworked and stressed because there is more work to go around. I mean I have had three of the ladies in my team in floods of tears on quite a number of occasions so far this year, just because they are so stressed out with the amount of work they have got to do, and they feel like they are failing!'

So, in terms of one of my major frustrations resources is certainly one of them ... I am frustrated by that what I think is under resourcing ... and as a result we are not managing to get all our work done across the customers! Now I'm not one to be overdramatic about this, I'm just being open, but I think we are at or close to breaking point in a number of pockets in our organisation! So, really good, committed, customer focused, hard-working, good behaviour people, they are so tired and stressed with it that we are in danger of some of them just walking out the door! I have heard people talking about, "I have had enough of [name of case study organisation] and

I will just go and work somewhere else if things don't improve". If that should happen then we will be in a real mess! We even have people going off with stress now, how can that be right!

(Interviewee E25)

Moreover, this frustration was further exacerbated by the entire process leadership had to go through to justify the requirement for additional resources. Whilst many of the interviewees acknowledged the rationale for a central process to monitor costs and ensure fairness, there was nevertheless a frustration felt by many that on the one hand they are granted by the organisation financial authority for decisions, often up to £250,000, to resolve customer or product issues, yet the same organisation wouldn't allow them authority to recruit one additional support staff member for around £50,000 without as one interviewee called it, having to "jump through the hoops". The following extracts gives a flavour of what many felt about the process and the perceived contradiction with financial decision authority:

'...if I come back to a real-world example... so a significant strategic customer, such as an Emirates or Qatar Airways, they can come and ask us to make rapid business decisions on very complex issues that can cost us a lot of money and put a load of risk on the business, and we can and do make those decisions within a day or two and then we contract them! Yet, if I wanted to get another commercial officer in my team it would probably take me a month to somehow convince people to approve it!

(Interviewee E26)

'So, if I wanted to get incremental headcount for my teams, I would first need to speak to both the SVPs for Europe ... then SVP for Middle East and Africa... but I also have a functional boss who is the commercial director, so if anyone wanting to increase headcount ...well you would have to probably in effect have to get to the back line umm... but it is not that straightforward (laughter)... so, I'm going to jump around a little bit... so, every day of the week I will get given business proposals to make decisions on should we grant this credit, this discount, this deviation to the contract or whatever to either solve a technical issue for a customer or make them feel a bit better about themselves, improve customer satisfaction or it's just the right thing to do! And I can, and do, make decisions on up to a quarter of £1 million to spend quite routinely, some two or three times a week, as part of my job. I really cannot get my head around the fact that that I can't just decide to spend an extra £50,000 on a bit of Op Cost over the next 6 to 12 months to just make us be able to do a better job to support our customers!' So, yeah! as you can tell I am very frustrated with things at the moment...'

(Interviewee E25)

Despite a preponderance of literature extolling the merits of human capital resources as a key strategic resource (see Barney, 1991; Neu and Brown, 2005; Raddats and Easingwood, 2010; Raddats, Burton and Ashman, 2015) there appears from the participants comments to be a challenge within the organisation in determining not just the allocation of resources at the right time to the right task, but also a sense that the drive for growth had brought to a head and, in some cases, exacerbated failings in both process and management of many key operant resources.

5.9.4 Summary of Performing-Organising challenges

Within the performing-organising highlighted, the challenges can be summarised as the dualistic tension of meeting customer and employee's needs simultaneously. The frustration of interviewees with the business case, scaling, and resource planning are all about the interplay between ways and ends. With the annoyance expressed at the apparent lack of coordination between the organisations' strategic imperative of growth and its requirement of high staff commitment and performance in confliction in many participants observation of a perceived lack of interrelated supporting processes to achieve those ends.

5.10 Learning/Performing Challenges

In this thesis, so far, the researcher has touched on challenges across the independent themes of learning and performing, themes covering such diverse topics as digitalisation and resource planning. However, the complex nature of servitization ensures that tensions operate not in isolation from each other but rather are interconnected. A point that will be explored later in this thesis. In this section, the nature of tensions experienced within and between learning/performing challenges can usually be attributed to an organisation '*building capabilities for future while ensuring success in the present*' (Smith and Lewis, 2011, p. 384). During the interviews, two themes came to encapsulate this theme: processes used to monitor current performance and build capabilities now and in the future, and legacy systems. These themes are examined next.

5.10.1 Learning/Performing Challenges – Key Performance Indicators (KPIs)

It is a truism that many organisations that utilise KPIs find they contribute little to overall performance (Parmenter, 2015). The reasons for this are numerous ranging from a misunderstanding of what drives performance, failing to align indicators to the business plan, measuring only those things that are easy to measure, linking KPIs to incentives, through to not challenging KPIs and updating them.

Throughout the literature review there was a paucity of information regarding business processes, as contrasted with the extensive coverage given to new ICT in delivering advanced service, a point noted by Baines and Lightfoot: '*Business processes are frequently overlooked during debates about advanced services*' (Baines and Lightfoot, 2013, p. 20).

During the researcher's data collection, many participants expressed apprehension over the organisation's business processes and, in particular, the use of KPIs, with many of the failings raised mirroring Parmenter's (2015) observations cited above. To some interviewees, the current KPIs were deemed inappropriate and appeared in certain areas of the business not to be aligned to the organisation's business goals but rather their focus was on delivering performance measures that mapped vertical hierarchal chains of command rather than captured the cross functional and horizontal nature of many functional activities. Such stovepipe business reporting for some participants was

frustrating, involving them in what they perceived as a waste of time and money in collecting information that they felt offered little added value in supporting the business output:

'But yet even here, 10 years later, I still find examples of where our objectives do not align across the business, but as long as the performance metrics operate in stovepipe manner rather than horizontally across the business functions to truly capture not just business activities, but learning, then I get frustrated and feel like I'm banging my head against a brick wall!'

(Interviewee E17)

'I think the performance measures we are currently using to judge ourselves by are inappropriate, I really want people to.... and I really encourage my people to do and it, but it is incredibly cliché I know, but to think if this was your business would you be happy with that reporting system?'

(Interviewee C16)

For others, despite recognition that long-term revenue generation now firmly resided within services, the ability to effectively forecast future revenue opportunities and thus measure them against strategic KPIs was problematic:

'...because the aero engine business model has evolved into one where the majority of the revenue comes from the aftermarket support than it does from the original equipment sale the ability to forecast how that revenue stream and how the engine will be operated in the future to create that revenue stream is key ...and that is becoming more difficult to define, so that's a challenge!'

(Interviewee B7)

'our tools for forecasting shop visits are 20 years old, they aren't reliable, we all know they are not reliable so if that is what our future financial forecast and guidance to the market is going to be on then heaven help us! We now no longer know how to forecast that is what we are being told ...'

(Interviewee E14)

Moreover, not only was the organisation failing to forecast appropriately, but there also was concern that KPIs were a broken tool with currently too many KPIs that were overwhelming management and having a detrimental impact on performance in certain areas. Such unintended consequences once again raise questions of the organisations alignment and failure to understand what is critical to drive organisational performance:

'Yeah! We have too many performance measures and I've said this at many workshops and forums... so, when I look at my business I ask: "am I making a profit?" "What is the cash flow like?".... You know being measured by 40 or 50 KPIs isn't helpful.'

(Interviewee C12)

'I can give an example ... I am charged to try to stay within a set guideline of what a shop visit should cost, so when I would go and speak to another [part of the] organisation and ask about the budget they would say that their budgets are, you know, in the 2016 review they were green the 12 months in 2016, and I said that was really interesting as mine were red for 12 months in 2016. And to be honest, their first reaction was, yeah, well that's interesting, so what? And I would say that you don't understand your measures, for your business are saying you are hitting your targets, 12 months in a row, solid green, job done, well done! And mine are red, and mine are red actually measuring your performance; it measures it in a completely different methodology. So... they are not at all aligned with ensuring that the company is profitable. They would argue ... and say oh no, no, no, we have profit targets we have to hit, and we hit our profit targets and that is helping the company, but what they don't understand is their profit comes from another internal [part of the] organisation... So, metrics drive behaviours, and metrics reflect underlying objectives, and our objectives do not align.'

(Interviewee E17)

The final line of the above dialogic the observation was also picked up by other participants, extolling a view that current KPIs also had a *dark side* (Parmenter, 2015, p. 43) driving unintended negative individual and organisational behaviour in certain areas:

'And I do think personally driving KPIs can lead to the wrong type of behaviour. ..you can become fixated by the dashboard and I think that comes from the imbalance between the functions and businesses.'

(Interviewee C12)

'In terms of the performance measures ... I think... I am thinking of just what we have to do... Yes, they do ultimately drive behaviour and focus...for right or wrong!'

(Interviewee C29)

'So, kind of building upon that [name of case study organisation] is very much, and one of my favourite sayings here which my team says this all the time... "metrics drives behaviours" and what you find is that people will attempt to align the metrics with their underlying objectives. But what [name of organisation] fails to recognise is that often our objectives are competing with each other!'

(Interviewee E17)

5.10.2 Learning/Performing Challenges – Legacy Systems

A further challenge that arose from discussions on KPIs concerned the organisation's extant reporting systems. Disquiet was expressed that whilst Information and Communications Technologies (ICT) may have evolved to capture multifarious data concerning the operation of an aeroengine by a customer; such integration of ICT for non-product related data, operational data required for the efficient and effective running of the business, was apparently entrusted with varying success to a confusing mixture of legacy systems.

Despite several attempts to upgrade and integrate ICT systems they had overall been unsuccessful for various reasons, resulting in the old legacy reporting systems being 'bolted together' as a makeshift solution or in some cases been reduced to Excel spreadsheets. If the integration of ICT systems is a key criteria for the delivery of a cost-effective service (Baines and Lightfoot, 2013), one that includes not just product performance data but also key management data then across the organisation then there appears to be conflicting interests between performance monitoring of the product verses performance monitoring of business activities which has resulted in extant legacy systems becoming cumbersome and, as a sample from participants comments below suggest, ineffective:

'umm... so the systems that we use to report information, so we're constantly on a churn for example of using new systems to extract the data or to report data, and that might be financial data, it might be operational data, it might be all kinds of data... and we take disparate small systems and we spend five or six years trying to get them to work, and then we overcomplicate them, and then we try to bolt them together and they never really work. So some of the systems we use now we default back to what we had 15 years ago because we had new ones come along, they never really worked, so we go back to the old ones and the problem is that RR has become much bigger in the last 15 years and the issue has become more problematic now as so many things have been bolted together for Excel...and that's how we run the company on Excel!...that is almost a backwards step for people coming into the company ... and if you add it all together we are a far more complicated company now and the risk factor is through the roof now in terms of getting things wrong, so things like that are actually probably more problematic now and more difficult to change than they would have been 15 years ago because we didn't really invest in things like that.'

(Interviewee E14)

'So, we have issues on ...umm...systems...because we aren't all on compatible platforms and the platforms that we do have internally are not capable of growing...So, a lot of our reporting is done through Excel, which is really bad way to report things, because we don't really know how to do things so we have lots of Excel spread sheets that seem to be very common systems because everything is so bespoke you can't manage the combinations through Excel..... and as the business continues to grow that means you either take on lots and lots more people to do that because you can't deal with things such as contracts in the same way, or you invest in the systems, but the systems we've got are so archaic ... so, as we grow, and the ability of our systems required to give us reliable information is very difficult.'

(Interviewee E8)

Furthermore, the continued use poor ICT systems to monitor and report performance was both time consuming and a major source of frustration for some interviewees, as the following vignette can attest:

'So, I am trying to tell a story of one example as an indication of things all over [name of case study organisation] for my commercial team at the moment where they are having to fill in spreadsheets which are basically sticking plasters, such that things get done and we don't leak revenue, because our systems on the line don't do what we need them to do! I mean it is not beyond the wit of man, is it to have a system that can have a contractual delivery date column in it, and an actual what is the latest date that you want to do?

So, we have one executive source of information! ... but no! we have got a Contracts Commitment Solution which we put the contract position in, we then have a Spare Engine Spreadsheet that we have to check twice a year, then separately somebody in marketing will come and ask for inputs to the SORB process, which lists what you need to make to support the customer requirement, it's normally engines, but there are three related but very, very, similar processes... and what we need to do is get the relevant folks in a room and ask who is using CCS? Who is using the spare engine database? Who in marketing is using this relevant information? How is it cascading to the supply chain? That has got to be possible surely, to replace three or four separate tools with one executive one, one which is very clear on who is accountable for keeping it up-to-date and all times. But no! So, throughout the business there are little bits of duplication like that across every area of [name of organisation] with people saying, "Oh, but I need it to be in that format" or "I need it to have that piece of extra information" and I bet if you could take out that kind of rubbish from my team you could probably take away the overtime problem! But how do you ever get the time to do that? ...That is what is so frustrating!

(Interviewee E25)

In general, despite the aim of ICT systems to be the conduit that pulls together the plethora of divergent information and people together to ensure appropriate monitoring of activities and aide decision-

making, there was considerable agreement from interviewees across various functional areas that whilst such ambition should be applauded its delivery was far from successful within the firm. Whilst monitoring the performance of the product was adequately covered in terms of an integrated ICT system, the same could not be said for many other activities essential to successful delivery. However, one interviewee saw hope on the horizon with the introduction of a new Chief Technology Officer (CTO) at Board level. The interviewee saw this as a step in the right direction to address many of the identified failings discussed, and hoped the appointment would provide the impetus, investment, and strategic direction necessary to ensure that future ICT needs deliver the much-needed closer alignment of information and data flow necessary to support more effectively the organisation's business strategy:

Researcher: Do you think that the size of your organisation has left you with a lot of legacy systems that do not necessarily meet data capture requirements and data information flow around the organisation, and perhaps even duplicate data?

Interviewee: *Correct! ... I think that is where our new CTO is coming in, he is trying to think simpler for us, and provide better systems support to help with decision-making. I do think that bringing our systems up to date and having a more IT led guy at the top of the company will definitely benefit us.*

(Interviewee E18)

However, such hope was also tainted with realism garnered from previous failures; many had seen such expectations raised before only to be dashed, and now one senior manager interviewed sensed that both time and money was running out to resolve the ICT failings in terms of business performance reporting:

'We have still got Legacy mainframes stuff that we are trying to convert into a new programme, which has got its own acronym PPI, basically our systems for the future; but it is a very daunting task that whenever you look at it, it is inching ever further to the right from an affordability point of view and at one point it's going to break I think if we don't focus on that quickly.

(Interviewee C11)

5.10.3 Summary of Learning-Performing challenges

In this section the challenges within the Learning-Performing theme related specifically to performance monitoring and legacy ICT systems, which arguable are interconnected in their purposes

to make value creation based more on gathering and using timely information for the benefit of decision-making and performance overview monitoring (Kowalkowski, Kindström and Gebauer, 2013).

Performance measures were generally seen as good within the structure of product performance monitoring but questionable regarding cross-functional business performance and organisational critical success factors. With respect to ICT literature, much is made of its perceived value as an enabler to better service delivery, primarily through product-performance monitoring, as well as improved cross-functional communication and monitoring of service- oriented business strategies (ibid, p.250). However, it is fair to say that whilst ICT use for product monitoring is well covered there is a paucity of research on its wider impact and holistic role on the overall functioning of the business.

From the analysis of participants discourse captured under the learning-performing theme, the challenges of business performance monitoring and data capture would appear to be both historical and an on-going issue, presented by interviewees as the result of the stochastic, idiosyncratic, nature of ICT planning. The impact of legacy systems on the business were presented generally as a negative factor, one that may jeopardise the organisation's ability to respond to future changes in its environment (Versteeg and Bouwman, 2006) as well as problematic in the organisation's ability to retain currency with ICT development. Such problems are in seen in no small measure resultant of the stove-piped internal alignment and continued utilisation of legacy systems. This analysis concludes that even if ICT has the potential benefits so claimed in the literature, such value can be difficult to realise in practice.

The next intra-organisational challenges to be analysed concern those thematical captured under the Belonging-Organising node and are explored below.

5.11 Belonging-Organising Challenges

Smith and Lewis (2011) describe the intersection of belonging and organising as '*tensions between the individual and the aggregate*' (Smith and Lewis, 2011, p. 384). In this thesis, the researcher posits this as an identity confliction between competing mindsets: Engineering verse Service and is discussed next.

5.11.1 Belonging - Organising Challenge (Mindset)

Throughout the servitization literature there is a recognition that for a servitization strategy to be successful organisations need to undergo significant change in their higher order capabilities, learning new skills and embracing a new mindset (Salonen, 2011; Huikkola, Kohtamäki and Rabetino, 2016; Baines *et al.*, 2017; Story *et al.*, 2017; Kohtamäki, Einola and Rabetino, 2020). The question of inculcating a mindset change is presented as a key criterion and a common theme in the literature (see for example, (Baines *et al.*, 2009; Lusch and Vargo, 2008; Martinez *et al.*, 2017; Salonen, 2011; Vargo, 2011; Vargo and Lusch, 2004) and is usually framed as the need for organisations to embrace a change in attitudes and a move away from conventional '*manufacturing logic*' (Normann, 2001). Such changes in terms '*of culture and attitudes are sometimes discussed in terms of a shift from goods to a service dominant logic*' (Salonen, 2011, p. 685).

However, despite the fact that support for a mindset change is almost universal in the academic literature as mentioned above, there is also recognition that getting manufacturing firms out of their product-oriented mind-set can be problematic (Fang *et al.*, 2008; Neely, 2008; Kanninen, *et al.*, 2017), as many are often resistant (See Gebauer, Fleisch and Friedli, 2005b; Matthyssens and Vandenbempt, 2010; Kindström and Kowalkowski, 2014). Such resistance to change could be viewed in terms of the G-DLogic being traditionally the dominant logic within manufacturing; forming not just the logic behind organisation's business schemas, but also responsible for cultivating the mental outlook of many engineering staffs in not only how they saw the world, but also the ideation of how a manufacturing business works, and how decisions should be made (Ng *et al.*, 2012).

Thus, the challenge for management delivering servitization is essential one of preserving the desideratum of a dominant engineering logic, (i.e., G-DLogic) (ibid.,2012) whilst simultaneously developing a more customer orientated mindset across the organisation (, i.e., S-DLogic).

Failing to adjust mindsets has been held responsible for organisational failure in areas as broad as changing a firm's identity (Salonen and Jaakkola, 2015; Windahl and Lakemond, 2010), organisational culture (Gebauer et al., 2005), and organisational structures (Galbraith, 2002). In truth, the question for individuals about mindsets revolves around the question of '*who we are*' (Clark et al., 2010, p. 416) and '*who are we becoming*' as an organisation (Gioia and Patvardhan, 2012); both questions are complex and thus challenging for management to address.

In terms of this research, with the case study organisation frequently presented as an exemplar of servitization success, as previously discussed, the question of changing 'attitudes' and 'mindsets' was one the researcher had assumed would have been well and truly resolved after 30 years of operations. However, it became clear early on in discussions that this was not the case, and that the question of 'who are we' and 'what are we becoming' was an unresolved dichotomy which raised its head quite early in the interviews, particularly in terms of organisational identity and individual identification.

To some of those interviewed the case study organisation was, and always would be, seen as an engineering company, for good or bad:

'... I think the vast majority of the company would think we are an engineering company.'

(Interviewee B4)

[Case study organisation name] would like to describe itself as a services company! However, I still think it is an engineering company! We pride ourselves on our engineering acumen, as we would. I still don't think we are as good at delivering services as we should be.

(Interviewee C29)

'Well..... [case study organisation name] is an engineering company at heart ...'

(Interviewee E8)

However, for others, there was a belief that a change in mindsets had taken place or certainly was in the process of transition within the business. While products were still seen as important; service was superordinate (Vargo and Lusch, 2008). This recognition of a change in the organisation's economic model some believed had shifted the debate from manufacturing product creation to value creation in services (Kowalkowski, Witell and Gustafsson, 2013; Kuijken, Gemser and Wijnberg, 2017), albeit slowly and not everywhere, but nevertheless the debate was growing in prominence:

'Umm...well it depends on who you talk to! ... clearly, we engineer products that are really at forefront of the aerospace industry, but we also execute services...so I think we are moving away from just engineering a product that we just put out there...I think that is an area we need to develop, and that is much more about people skills then the more traditional engineering skills.'

(Interviewee A1)

'I think the other one is 20 years ago, by and large, we sold products and hoped it failed just after the warranty finished (laughter)... I'm being a bit flippant that way, but now we are intrinsic to our customer operations in terms of how we provide services and...umm... as a consequence of that, we now have to have a totally different mindset in how we operate.'

(Interviewee B4)

'For a long time, the services part of our world has grown and grown and grown, and it is so on a par with, in terms of equivalent now, with engineering, and it is going to go so far the other way that we will undoubtedly be considered a service firm, and part of the service industry in the longer term; I certainly see us getting there, and see it that way. But I don't think that is a general view yet!'

(Interviewee E24)

What the commentaries indicate is that despite over 30 years as an exemplar of servitization success, one of the key measures that scholars cited as constitutive, that of a change of mindset, was still proving elusive with the battle lines contested on a dichotomised front of: is the business evolving into a service led organisation or is still predominately an engineering led one? Opinions proffered to this question appeared to be shaped by participants past and current experiences, together with the role and location they occupied in the organisation. In both formal interviews and ad-hoc chats with organisational members the researcher still on reflection believes despite efforts to balance these two divergent logics

there remained across the organisation two distinct and competing mindsets (logics): Manufacturing/engineering (G-DLogic) and a Services (S-DLogic).

These competing logics could also be detected in the language used by almost all the participants to describe the bifurcation of the business into two divergent domains: 'shiny toys' and 'aftermarket'. Kindström and Kowalkowski (2014) noted that the use of terms such as 'aftermarket' can reinforce the concept that services are just an add on to the core product and can be a signal that despite best efforts to change mindsets, subconsciously for many, a G-DLogic remains prevalent within the business. Certainly, during most of the interviews conducted for this research, the terms 'shiny toys' and 'aftermarket' were the default terms used to describe development and production functions and those attributed to MRO activities and services.

Thus, many of those interviewed for this research still believed there was still some level of distinctness of mindset between the two groups. Story et al. (2017) suggests that one useful way to bridge this distinctiveness is through the employment of multi-skilled engineers who are flexible in terms of their *'willingness and aptitude to work in a more service-oriented, customer-focused environment'* (ibid, p. 8). However, the move of highly skilled engineers into a more customer-focussed environment is no guarantee of success, as one senior manager explained:

'(laughter)... they find it bloody hard (Laughter)... So, my chief engineer has changed, he's come from NPIerr... and he's struggling, struggling to get to grips with the challenges of not how clever you can be in designing modification, the challenge is how can you make more money through services...'

(Interviewee A5)

for despite the recognised benefits of such multi-skilled engineers, any successful transition was caveated in terms of how prepared engineers were to learn not just new skills but embrace a more holistic knowledge of the engine lifecycle, and as such have their engineering mindset challenged. Moreover, such a transition was presented as more difficult to realise the longer an individual stayed within the product design and manufacturing side of the business:

'It is very rare to see late-stage engineers coming across to our area of the business, by then they are usually institutionalised and content with their life.'

(Interviewee C29)

So, again taking a rather flippant view, to be a chief engineer you should really go and be at the frontline with the customer for a period of time because if you are having to talk about your product and services to a customer every day then you might design slightly differently. You might have a little bit more empathy ... you might empathise slightly differently, and it might just mean one decision a year is just slightly different and that might make all the difference...it might improve the customer experience. It's just a little...most haven't got that mindset really!

(Interviewee B4)

5.11.2 Summary of Belonging-Organising challenges

This thematic node's focus was on examining the servitization challenge of refocusing employee's mindset from one of product orientation to one with a greater emphasis on service. The logic behind such a requirement comes from the meta-narrative in existing literature which argues that production and exchange of services is now greater than the manufacture of goods; consequently, there was a need for a greater focus on understanding value from a customer's perspective. In the corpus of servitization literature, such a challenge is construed as an organisational transition from manufacturing logic (G-DLogic) to a more customer focussed logic (S-DLogic).

This challenge, presented by many scholars as a key criterion for a successful servitization transition, is as Johnstone, Dainty and Wilkinson (2009) noted, rather simplistic in its tenure as the problem of changing mindsets is not an isolated activity, but one that needs to recognise the interconnected and interrelated necessity of integrating service and production operations. However, participants' comments suggest that some employees may still have little appreciation of the value of services, especially in parts of the business which have little contact with the customer and thus any push for a mindset change conflicts with their understanding of the business. Supporting Davies et al (2006) contention that, *'changing the mindsets of thousands of employees who have grown up with a narrow vision of traditional products or services is perhaps the biggest barriers of all'* (p. 47).

For some participants, such a liminality is indeed challenging and leaves one questioning whether such an organisational-wide transition is even possible. Later on in this thesis, the researcher will challenge the contention that only two divergent logics (G-DLogic and S-DLogic) need to be considered within a servitization strategy, but in this thematic node it is fair to stay that despite literature's warrant extolling the necessity of transition to a more services mindset, within the case study organisation even after 30 years of servitization operations the debate around the collective identity dichotomy of "who are we" and 'where are we going" remains unresolved.

Belonging and organising efforts as Smith and Lewis (2011) comment, interconnect between the cognitive schema of organisational and individual identification, with organising most fruitful when individuals identify with the whole organisation. But, as has been shown in the dialogic statements supporting this analysis, the language participants used presents a picture more of 'two warring tribes' consisting of 'shiny toys' (G-DLogic) and 'aftermarket' (S-DLogic) rather than a unified service-orientated organisation. Resulting instead in an impression of an organisation representing itself more along the lines of a complex pluralistic coalition of divergent functions and mindsets.

5.12 Summary of actions to address the first part of the research question

How tensions manifest themselves was at the core of this study's investigation. Selecting an interpretivist grounded theory approach as the methodological perspective enabled the researcher to undertake an exploration of the phenomenon through the 'eyes' and 'voices' of both participants and the researcher.

The analysis and findings presented in this first part of the research are based on a considerable amount of rich interview data together with relevant documents, such as annual reports, websites, and internal company material, including the organisation's in-house newspaper, product information, and presentational material. This was then supplemented with an extensive literature review; whose combined analysis enable the identification and presentation of a holistic model of the challenges facing the case study organisation.

Utilising Smith and Lewis' (2011) framework of organisational tensions, the identified challenges were then placed under the thematic headings of Belonging, Performing, Learning, and Organising. This framework patiently draws from Smith and Lewis' (2011) original model but is then further progressed to explore the organisational challenges within the research context of servitization, capturing and displaying a holistic model of the interrelated and interconnectedness of the challenges (Fig 5-1 refers). These challenges were then examined in detail to address the first part of the research question:

“How does the intra-organisational structural challenges of an established servitization organisation compare with those of firms undergoing initial servitization transition ...”

However, to answer the second part of the research question:

... and how could instantiated tensions within them support their recursive nature?”

required the undertaking of a cross-model analysis between the literature review findings and the findings from the empirical study to ascertain if there was any similarity of challenges identified between the two models.

Following an initial inspection of the two models there appeared to be a number of surprising similarities of the indicators used to describe various organisational challenges, this is an interesting observation in its own right, as the focus of the majority of the servitization literature reviewed was on the practicalities of transitioning to a servitization strategy, whereas the empirical findings represent the challenges attendant of an established, and successful servitization organisation with over 30 years' experience of the phenomenon.

Consequently, to ascertain if the initial observations were valid a more detailed examination between the literature findings and empirical findings was required. This analysis is presented in sections 5-13 to 5-16.

5.13 Cross model comparative analysis: LEARNING challenges

This section discusses the comparison of Learning challenges between the literature review and the empirical findings from the case study investigation. From the literature review, the researcher aggregated the challenges identified under the label of Business Case issues (Figure 2-3 refers).

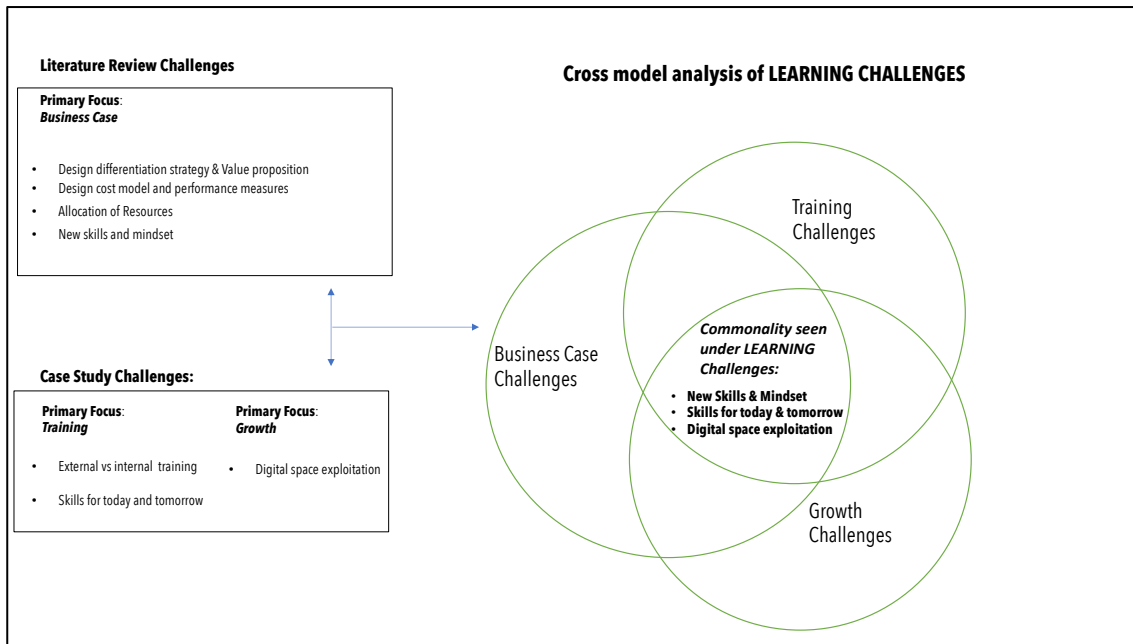


Figure 5-3. Comparison of LEARNING challenges

The nomenclature of 'Business Case' was primarily chosen as the general tenure from the literature review presented the basic purpose of a business model as the design by which organisations conceptualise a given set of critical choices that the organisation had made about markets, competitor differentiation through value propositions for customers, and then creating the organisational architecture of people, structures, processes and management to deliver that value (Chesbrough, 2002; Smith, Binns and Tushman, 2010).

A servitization business model also necessitates a heuristic logic connecting simultaneously the need for continued exploitation of a product-oriented market offering with the future exploitation of a service-oriented market offering ((Gibson and Birkinshaw, 2004; He and Wong, 2004), thus presenting organisations with the challenge of developing and maintaining capabilities to successfully engage in

both types of activities simultaneously and synergistically for the effective implementation of a servitization strategy.

From an initial viewing the primary difference in the case study findings from that of the literature review were found to be that within the literature the challenges of learning were collectively associated with the Business Case. However, from the empirical research, the findings related to business case challenges do not appear as an outcome of Learning, rather they were placed under the theme Performing/Organising. The rationale behind this change reflects the context of the study, i.e., the organisation being researched had been successfully operating a servitization business model for over 30 years, as such any issues identified with its operation were assessed as being more about how the organisation was performing against the business plan or issues around how the institution was organised to deliver it.

For instance, learning new skills necessary for the delivery of a servitization strategy is often cited by scholars as a critical component for the delivery of a successful servitization business plan (Alghisi and Sacconi, 2015; Oliva and Kallenberg, 2003; Baines and Lightfoot 2013; Gebauer, 2008; Homburg, Fassnacht and Guenther, 2003; Kinnunen and Turunen, 2012); however, counterfactual to this perspective were many of the participants experiences. Whilst a few had been fortunate to be selected for management courses, many of the participants expressed umbridge that they had received no upskilling or CPD from the organisation, with some noting that their last formal training undertaken was when they joined the company, which in some cases was several decades ago.

Additionally, participants expressed apprehensions over how the requirement to develop new capabilities, specifically in the digital space area, was going to be achieved, with many holding a view that not only was this a significant lacuna in the organisation's current skills, but access to these skills in the future could be problematic as personnel with advanced digital skills already represent a limited pool of resource, and their transferability across different sectors make such employees highly sought after; thus competition for such scarce resources could lead to a global "war for talent" (Beechler and Woodward, 2009).

Moreover, anxiety was expressed that the need for advanced digital skills would require a change in mindset for many employees as embedding such a dynamic enabler as digitalisation would necessitate yet more organisational change across structures, processes, as well as cultural changes. Some interviewees recognised that employing individuals' with such dynamic operant technical knowledge-based expertise would challenge the traditional 'lifers' view of career life cycles and would oblige the organisation's management to develop new '*extensive relationship management and leadership skills; and new human resource, development and career processes*' (ibid, 2009, p. 283). Embracing digital growth requires therefore the organisation to undergo significant changes both to business models (Luz Martín-Peña, Díaz-Garrido and Sánchez-López, 2018) and mindset.

However, whilst digitalisation and servitization would offer the organisation new ways to capture and create value for customers, for its implementation to be successful the organisation's leadership require a good knowledge of both concepts and how they relate (ibid, 2018, p. 96). Unfortunately, many interviewees felt that senior management whilst desiring the opportunities digitalisation offered lacked any real understanding of the implications of such a dynamic change would have in terms of future resources, structures, and changes to organisational culture.

Again, within the literature review on a servitization Business Case model, the development of cost and pricing models (for example, see Gebauer, Fleisch and Friedli, 2005a; Neely, 2008; Malleret, 2006; Barquet *et al.*, 2013; Zhang and Banerji, 2017) and performance measures (Baines, Lightfoot and Kay, 2009; Martinez *et al.*, 2010) were both seen as areas of critical importance. The pricing and cost models provide mechanisms related to the created value of the product-service offering (Zhang and Banerji, 2017) being offered to customers; however, the literature acknowledges that the price difference between the production cost of the product and the encompassing service offering could pose problems from customers (Barquet *et al.*, 2013; Baines and Lightfoot, 2013; Zhang and Banerji, 2017), a view acknowledged as still of concern by some participants.

Defining the performance measures to manage the servitization strategy was another component for the development of a servitization business case. Its importance residing in the fact that the pricing

and cost models already discussed, are based on value creation; therefore, it is essential that performance measures are developed to ensure that agreed performance indices, both externally with customers, and internally with various elements of the business, are agreed to ensure the alignment and integration of all areas involved in the delivery of product and service offerings. Again, these challenges remain extant in the case study organisation, but rather than be about ensuring such measures are captured in a new business plan the researcher saw participants comments, in general, more about how the organisation output was performing against such measures and whether the measures reflected what was really happening across the organisation. Accordingly, such comments were deemed more appropriate to be placed under PERFORMING/LEARNING challenges.

5.14 Cross model Comparative analysis: PERFORMING challenges

This section discusses the cross model comparative analysis of Performing challenges, which is shown at Figure 5.4.

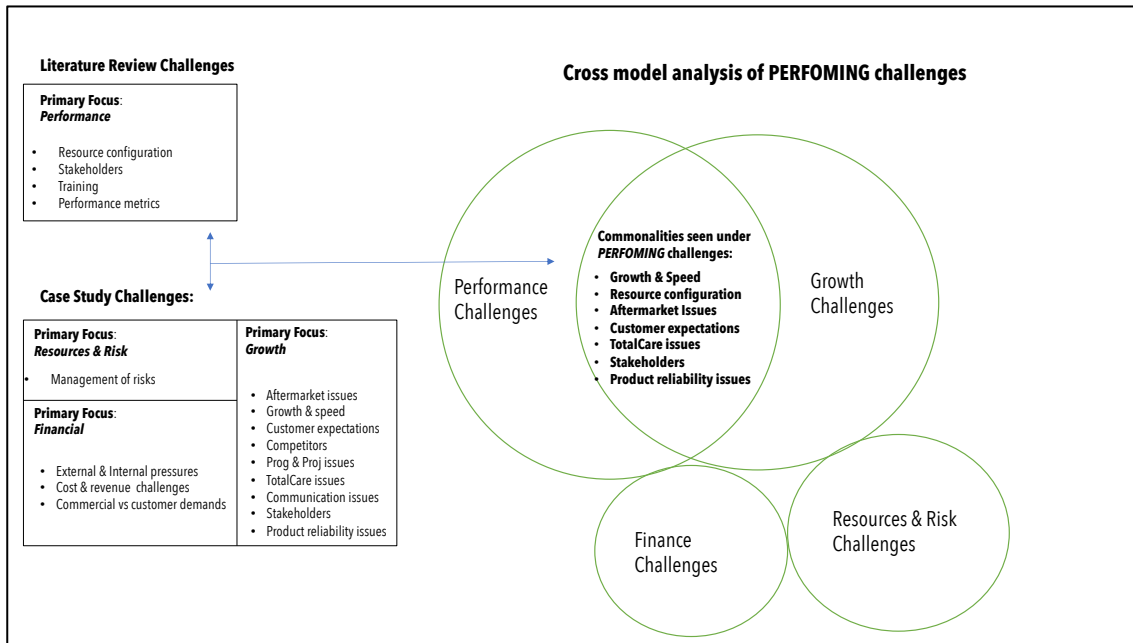


Figure 5-4. Comparison of PERFORMING challenges

Under performing tensions, challenges can arise from a variety of conflicting managerial demands (Lüscher and Lewis, 2008) often as a result of the plurality of external and internal stakeholders competing goals (Smith and Lewis, 2011).

In comparing the two models, once again the chief difference lies within the contextual setting of the analysis. The literature review analysis (Figure 2-5 refers) focussed on the challenges a manufacturer faces in terms of undergoing a servitization transition, as such the issue of resource configuration in the literature tended to concentrate on emphasising those capabilities of servitizing firms that are distinct from those of a traditional product-centric manufacturer. Much of the literature advanced a view that value creating opportunities now resides with following a S-DLogic, arguing that in adopting a servitization strategy manufactures need to move away from a traditional G-DLogic belief that value lies in the product and the effective utilisation of operand resources, to one that sees goods as '*merely the distribution mechanism for service*' (Benedettini, Neely and Swink, 2010, p. 950); thus, acknowledging

that competitive advantage lies within the operant resources held in services. As a consequence, and supporting Storbacka's (2011) view, there is a need for an internal resource coordination.

In examining the case study, however, the researcher presents the issue of resource allocation as not solely linked to Performing Challenges, but rather manifests itself across a variety of organisational tensions, i.e., Performing/Organising, Performing/Belonging, and Belonging. This is one of the key findings of this research, that many of the challenges identified are interconnected to other challenges within the framework. Such a connection was not obvious from the literature readings and only became visible to this researcher as the interview analysis was continually evaluated as new data become available.

Between the two models another area of commonality referred to the challenges a plurality of stakeholders can bring to the organisation. The literature talks about the need for organisations to embrace greater levels of collaboration and co-creation via stakeholder engagements and relationships (Baines and Lightfoot, 2013; Raddats, Burton and Ashman, 2015). In effect to utilise their customer base as operant resources as a reciprocal practice where value is co-created with the aim to design and deliver exclusive and difficult-to-imitate offerings (Oliva and Kallenberg, 2003; Vargo and Lusch, 2004; Fang, Palmatier and Steenkamp, 2008; Gebauer, Gustafsson and Witell, 2011).

However, in the case study analysis, there was considerable debate between participants regarding the impact the often-competing demands from external and internal stakeholders were having on the running of the business, its future identity, and employees' perceptions of the SLT. Such tensions, however, are not uncommon and acknowledged widely in the literature. In the context of organisation tensions, performing tensions can be presented as the differing, and often conflicting, demands of both endogenous and exogenous stakeholders contending views of an organisation's performance and success (Donaldson & Preston, 1995; Smith and Lewis, 2011).

Such plurality of perspectives now impacting the business was acknowledged by many participants with a recognition that the management of these diverse stakeholders was problematic. This increase in stakeholders was in part due to the organisation's successful growth drive, which had seen not only

an increase in the number of customers the organisation was now contracted to work with, but interestingly a perception held by many participants was that customers had become more demanding both in terms of the services they wanted, their contract lengths and access to residual value of engines. These changing demands were clearly exercising a lot of mental effort across the business as both large carriers, with years of expertise of working with the case study organisation, and new entrants to the organisation's service offerings, were now presenting competing demands for the organisation's time and resources, often without wishing to pay anything additional for it.

This balancing act between maintaining customer satisfaction and the financial returns required by external stakeholders was another tension that came to light during the interviews. Concern was articulated about managing external stakeholders' expectations whose motives appeared to some participants to be driven more by a desire for short-term financial goals than long-term sustainability of the organisation. With the firm having already published a succession of profit warnings over the last few years there was anxiety that failure to deliver on financial promises could result in external stakeholder pressure for the instigation of yet more structural change to the organisation if improvements in performance were not forthcoming.

The empirical findings of this study align themselves with strategy literature in recommending that understanding the strategic intent of an organisation requires an assessment of potential conflicting demands between both internal and external stakeholders, and once identified the organisation should seek openings in which to build a *"close and collaborative modus operandi"* (Nordin and Kowalkowski, 2010, pp. 450). However, in any business, relationships will change, and new stakeholders will appear who might not have the same interests or vision as previous incumbents, but who nevertheless will require careful management. This was certainly the experience of many participants interviewed for this research, who comprehended both external and internal stakeholders actions as challenging the organisations status quo.

The next similarity to look at under the theme of performing challenges concerns the requirement for performance metrics. Performance measurement will be commented on further under the theme of

LEARNING/PERFORMING but as the literature review model had situated performance indices under PERFORMING challenges it is only correct that a brief comment on it is presented here. In the literature review, Baines and Lightfoot (2013) note that traditional product centric manufactures tend to focus their performance metrics on cost, quality and delivery performance. However, servitization requires firms to focus on product (or asset) performance, availability, and reliability (Baines and Lightfoot, 2014), resulting in the development of new performance metrics that focus on outcomes aligned to specific customer needs.

Therefore, moving to a servitization strategy can present manufacturers with the challenge of dealing simultaneously with competing performance measures, i.e., dealing with those traditional metrics that are best suited to the management of their products and processes, whilst at the same time utilising performance measures aligned to their customers objectives. The latter measures seen as necessary to demonstrate value and ensure effective delivery against agreed standards (Zhang and Banerji, 2017). Hence the establishment of effective and appropriate performance measures are seen as an essential challenge to be overcome to meet the qualitatively different aspects of delivering a product-service based offering (Mo, 2012).

In the empirical findings, the issue of performance matrices is only touched on under the theme of Performing and are primarily conversations related to issues of product reliability, TotalCare performance, and aftermarket concerns, and how such issues are reported. In choosing to move the performance matrices to the theme of LEARNING/PERFORMING challenges, the researcher believed performance measurement and KPIs were better suited under this theme, reflecting more appropriately that the organisation was now well-established in delivering servitization offerings.

Consequently, the challenge of '*building capabilities for the future while ensuring success in the present*' (Smith and Lewis, 2011, p. 384) was deemed not one of determining appropriate measures for a business case submission, but rather of the effective and relevant delivery of performance reporting on operand and operant activities necessary to deliver agreed customer value and standards. Hence the need for metrics beyond just financial reporting.

5.15 Cross model comparative analysis: ORGANISING challenges

In this section the results of comparing the literature conceptual model and the empirical conceptual model covering Organising challenges are discussed, with their conflation reflected in Figure 5-5.

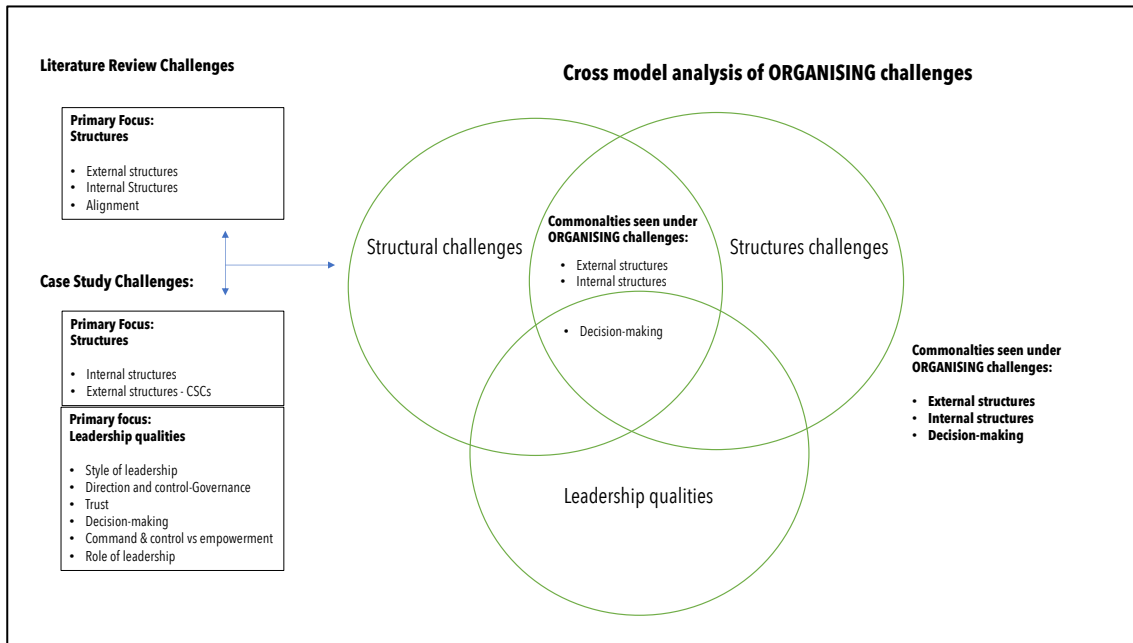


Figure 5-5. Comparison of ORGANISING challenges

In the analysis of assessing the similarities between the Organising challenges delineated in the literature review model (Figure 2-4 refers) and those of the empirical study (Figure 5-1), there were two noticeable parallels at first. Taken together both models had at their heart a recognition that a key challenge to be overcome was that of ensuring appropriate orientation both internally and externally of their supporting organisational elements to better support their business offerings, with the major difference being the case study findings included participants responses to the role leadership plays in organising.

From a literature review perspective, the focus is on ensuring that manufacturers undertaking a servitization journey consider the implications of reconfiguring their firm's structures necessary to ensure they have the capability to deliver their product-service offerings to customers (Mathieu, 2001; Gebauer, Fleisch and Friedli, 2005; Baines, Lightfoot, Benedettini and Kay, 2009). Blindenbach-Driessen and Van Den Ende (2014) highlight that a central issue throughout much of the servitization

literature surrounds the decision a firm needs to make as to whether to have separate or integrated structures to exploit-explore activities. Duncan (1976) refers to such choices as structural ambidexterity where organic structures are engaged on explore activities, and mechanistic structures utilised for exploitation activities.

Such a question typically includes where infrastructure sites are located and what activities are undertaken at them (Baines et al., 2009a). Referring to the case study organisation, the decision they took was to have a dual autonomous structure which was accomplished by retaining its centralised manufacturing site at Derby, mainly focussing on aeroengine, design and development (its exploit activities), whilst MRO services were established in multiple locations across the globe, located close to many of their customer's operations (explore).

From interviews conducted, as well as background readings on the company, it is arguably a reasonable assessment to concur that the case study organisation had reached an advanced stage of servitization and as such much of the initial decision-making on structures and facilities was made some time ago; however, the combination of a strategic transformation programme and the standing-up of CSCs has brought into sharp focus that the organisation is now a highly complex system due to the increasingly necessary intra-organisational co-ordination of different functions, structures, countries, regions and customers, processes and behaviours necessary to support the organisation's servitization strategy; and it is here that many of the challenges now facing the company have their genesis.

Under Organising challenges, a clear difference between the two models lay in the significance participants placed on the role of leadership, and leaders' behaviours across not only challenges under the Organising theme, but also those raised under the theme of Learning/Belonging.

Although the opus of servitization literature extolls the value of undergoing the transition as a way of achieving competitive advantage, it also acknowledges that there are significant challenges to be overcome with flaws in managerial decision-making suggested as being a contributing factor (Gebauer et al., 2005). Presented under the challenge of Organising, the question of decision-making was raised by several participants, who complained that despite considerable organisational structural changes to

remove hierarchies concerns remained over what some perceived as the 'glacial' pace of decision-making within the organisation and consequently appears counterfactual to the tenants of successful servitization, (i.e., to be both agile and accountable to meet the competing and varying demands of both old and new customers), and infers there may still be issues with the organisation's internal structural alignment and processes.

The question of alignment was also identified under the literature review model as an organising challenge, and from the perspective of actions and decisions a firm needs to consider prior to, and during, the servitization transformation this appeared a logical home for it. However, from the empirical study, structural alignment was something that had moved subtly under the Organising/Learning Theme. This judgement was in recognition that the organisation was still undergoing significant organisational change in terms of structural changes, process changes, and staff changes, and as such was in the process of both organising these activities as well as looking to learn from past experiences.

5.16 Cross model comparative analysis: BELONGING challenges

The final discussion relates to the comparison of the literature model (Figure 2-6 refers) and the empirical research model (Figure 5-1 refers). The resulting confluence of both models is represented by Figure 5-6 below.

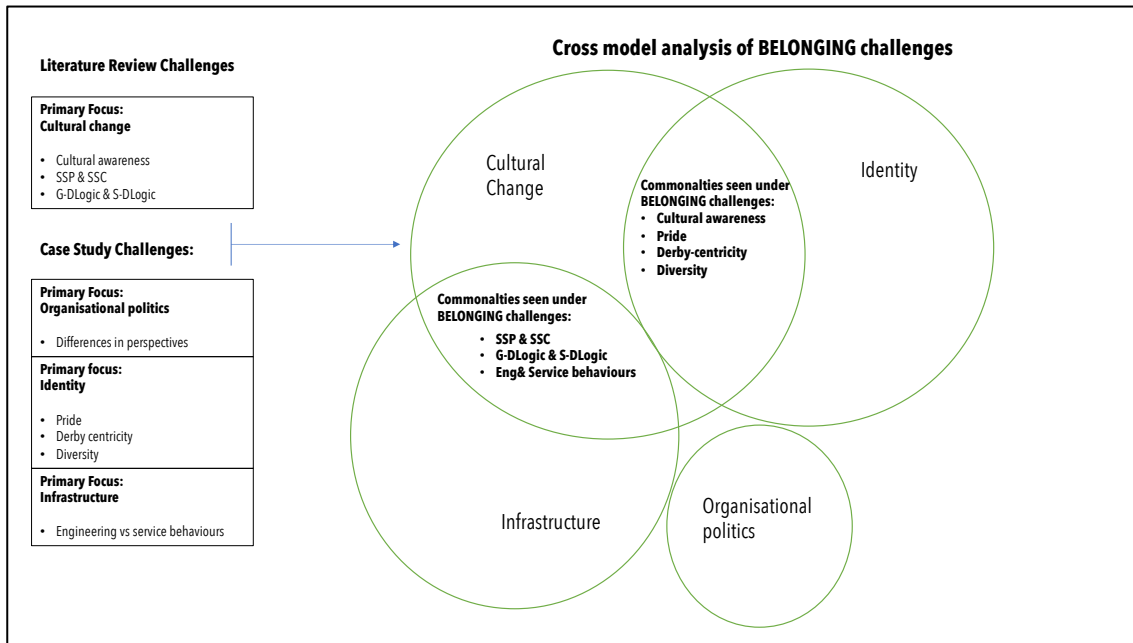


Figure 5-6. Comparison of BELONGING challenges

From the analysis of the literature, the conceptual model developed captured a variety of determinants of Belonging Challenges under an aggregated title of cultural change (Figure 2-6 refers). The determinants behind this aggregate theme related on the whole to the fact that servitization is a paradigm shift for organisations (Rabetino et al., 2018; Redding, 2014) and as such they need to understand that part of that shift requires a change in behaviours (mindsets) across the organisation, one that inculcates a progressive S-DLogic if they wished to be successful (see for example Alghisi and Saccani, 2015; Fang, Palmatier and Steenkamp, 2008; Oliva and Kallenberg, 2003; Baines, Lightfoot, Benedettini and Kay, 2009; Baines and Lightfoot, 2013; and Ng *et al.*, 2012). However, such a paradigm shift is far from easy to achieve, as this research contests, and despite the case study organisation having had over 30 years of experience of delivering a servitized strategy, it still faced numerous organisational challenges to its delivery.

In the literature review model, one the determinants behind the cultural challenges facing an organisation intending to undergo servitization concerned the transition from support-to-services selling products (SSP) to support-to-selling customer services (SSC) (Oliva and Kallenberg, 2003; Baines and Lightfoot, 2013) which is presented as a shift in an organisation's value-system: moving away from selling products to selling service. However, across the literature there appears to be a dichotomy of opinions as to the optimum solution for this challenge, with some arguing that it is best to separate services from that of production (Oliva and Kallenberg, 2003) and others suggesting that it better to integrate product and services to better support complex customer needs (Neu and Brown,2005).

From the perspective of the case study organisation, it is argued that it has adopted an integrated approach but, despite its best intentions and over 30 years of experience in delivering servitization, it still struggles at times with SSC strategies. This could be explained by the fact there still resides in the organisation a dominant embedded culture of what Johnstone, Dainty and Wilkinson (2009, p.532) refer to as '*product centrality*'.

After the literature review, the researcher initially assessed the challenge of delivering a cultural shift as one of belonging and enculturation, and viewed the tensions involved in this transition as a conflict between the competing poles of a 'product value framework' (i.e., supporting a goods-dominant logic) and 'service value framework' (i.e., supporting service-dominant logic): a duality of logics that according to the literature are not necessarily mutually compatible. In respect of the case study organisation such a duality of logics was still said to exist by many participants, with some openly acknowledging that there resides a cultural dissonance between 'Shiny toys' (Engineering- G-DLogic) and Aftermarket (Services-S-DLogic).

This at first glance would appear strange for an organisation that is frequently presented by scholars as an exemplar for servitization implementation and success that such confliction should still exist within the business. However, it is worth reiterating that during this research the organisation was undergoing significant upheaval, and organisational tensions can become more salient during times

of organizational transformation and upheaval (Seo, Putnam and Bartunek, 2004). Such upheaval therefore could be a contributing factor to the dissonant voices as previously latent tensions are now becoming more salient as the organisation deals with unprecedented growth drive, transformational change initiatives and in some areas a scarcity of resources, all bringing to the fore embedded tensions and challenges for management across the organisation.

However, it is worth noting that despite such conflicts there was considerable pride expressed by many participants in working for the organisation, indeed with an aggregate total of some 475 years' service between the interviewees reflects a heart-felt loyalty and pride for the company and its brand and it was going to take a lot for many of them to voluntarily exit the business. That said, a tipping point for some was now close generated by a fatigue with change initiatives, and concerns over the way the recent headcount reductions had been handled. The way these strategic actions had been implemented had raised questions in some minds as to whether the organisation's identity still resonated with their own values and sense of self.

Within the literature such enculturation challenges are presented as conflictions between an organisation pushing the need for change with the desire to retain a developed sense of self and purpose, in which identity, one could argue, can become both an enabler and obstacle to success. During many of the discourses the researcher felt that the anxieties being expressed and captured under the theme of Belonging coalesced neatly around the concept of identity. The challenges in many ways captured the dialectical angst of current versus the past/future. By this the researcher contests that many of the participants whilst acknowledging the need to grow as a business also recognised that with it comes questions of 'who are we' and 'where are we going'.

Such anxiety was forthcoming in discussions over how the 'motherhood' still retains significant sway in both processes and thinking, frustrating many of those operating within the Services domain of the business, with some portraying this as simply the continuance within the organisation of a dominant engineering mindset, a mindset that resulted in bureaucratic processes and risk aversion in decision-making. Such bifurcation of opinions was most prominent in discussions of how personnel identified

with the organisation (i.e., was as an engineering company or a services company). In fairness one or two participants recognised that you cannot have one without the other, and that success in servitization requires the paradoxical management of both mindsets, and such a holistic perspective was based on experience of both the manufacturing and customer side of the business.

The challenges of both understanding identity and negotiating it are complex; not helped by the fact that the concept of identity is a socially constructed one and balances two conflicting tensions at the individual level: the desire to fit in, with the desire to be different (Sheep, Kreiner and Fairhurst, 2017). In the empirical study, there were clear concerns expressed by participants as to understanding exactly what the organisation's identity was: was it an engineering company, a services company, or a hybrid of the two? Such metaphysical questions were not helped by the CEO referring to the organisation as an industrial technology company ([Business West, 2019](#)). Scholars note that an actor's identification, or perceived affiliation and sense of belonging to an organisation can be construed as a historical process, one acquired over time (Suddaby, Foster and QuinnTrank, 2010) and considering the length of time all the participants had worked for the company it is understandable that many of them perceived their personal identity deeply rooted with the organisation's identity and be detected in comments when interviewees talked about 'self-verses others', for example in the 'imagined communities' (Anderson, 1991) of 'shiny toys' verses 'aftermarket' and from external contributors referring to activities at the case study main site as 'the mothership'.

In the findings these dualities expressed by many senior managers infer contrasting positions or indeed rivalries that are becoming more salient as the challenges of delivering growth, scarcity of resources and increased workloads are creating dialectical tensions within many employees wrestling with adapting to a changing business environment and increased organisational change, resulting in some individual's questioning whether they still feel a 'fit' with the company. From the analysis of the data there are signs that the enculturation challenges highlighted in the literature review model may well be resurfacing as events within the case study organisation are challenging many of the socially

embedded interpretive processes that individuals use to shape their '*historical consciousness*' (Wadhwani et al., 2018, p. 1664) of the organisation.

One interesting observation that came out in general discourse, and not specifically covered in the servitization literature, concerned diversity. On this subject there was general agreement by participants that greater diversity was a good thing, although this was caveated by some concerns expressed about how the organisation was going to be able to inculcate the current organisation culture at Derby into many of its CSCs. Additionally, a more interesting take on diversity was raised by some of the female participants, who when asked to describe the organisational hierarchy laughed and referred to it in terms of "White, Male, Staid, and UK centric". Such comments whilst context bound nevertheless offer an insight into one of the basic tenants of humour - it offers participants a sense of collective belonging to a group (Holmes, 2000), in this case female participants of the case study organisation – and its use can be used to offer an outlet to express ambiguities in power relationships, and, as in this case, license to challenge hierarchical status. Consequently, the phenomenon of spontaneous humour can be a useful mechanism for researchers to identify both cultural and ambiguity issues in organisations (Hatch and Erhlich, 1993).

In respect of the female participants' quote, this almost throw-away humorous observation raises an interesting question: does humour and organisational issues go together? and if so, are comments expressed as humorous, really an opportunity for actors to express organisational contradictions and ambiguities surreptitiously that when exposed to interpretive analysis offer an indication of a usually hidden organisational tension. Such a premise is not without merit, for scholars studying mundane reality ((Burr, 2000, 2015; Glaser and Strauss, 1967) offer implicit support to the idea, with the assertion that it is often the unobtrusive aspects of organisational life that offer clues to cultural and organisational inconsistencies; consequently, humorous comments may be one mechanism for unlocking these insights. Certainly, in terms of the case study, this aperçu on senior management when reiterated back to some male participants was acknowledged as a valid comment, though one not many wished to engage further on.

5.16.1 Limitations in the cross-model comparative analysis

In the act of apposition between the literature and empirical study conceptual models the researcher acknowledges a weakness in his literature review conceptual model in that it only shows the '*four core activities and elements of organisations*' (Smith and Lewis, 2011, p. 383), that of Organising, Belonging, Learning, and Performing. Missing from the literature model was a recognition that these four core activities do not exist in isolation or indeed are linear in definition, rather like the case study model (Figure 5-1 refers) the determinants behind the thematic category's operate not just between the four core themes but also within them (Smith and Lewis, 2011). Such a perspective was not initially appreciated by the researcher when constructing the literature conceptual model, and its significance only became apparent once the complexity of field research observations and analysis was undertaken. Nevertheless, it is argued that analysis of both models offers still valid observations between the challenges firms need to be cognisant of prior to undertaking a servitization strategy conflated against those facing an established servitization organisation. Consequently, Table 5-1 represents a more holistic juxtapositioning of the thematic organisational challenges identified between the two models.

As already commented on, the literature review models represented a rather simplistic conceptual framework of organisational challenges, failing as it did to consider the interconnectedness of the core tensions of an organisation, thus missing out on the complexity of the competing elements but also the challenges that organisations may face at their intersections. Addressing this weakness, the empirical case study conceptual model, whilst at first glance might appear more impalpable than the literature review framework, nevertheless presents a better representation of the complexus of holistic and heterogenous constituents, ambiguities, and challenges facing the organisation by bringing them all together under a single schema of organisational tensions.

Table 5-1. Juxtapositioning of literature review and empirical study challenges

Themes	Literature Review	Case Study Review
Organising	Structure	- Structure - Leadership
Performing/Organising		- Scalability - Resources - Identity Issues
Learning/Organising		- Training - Structures
Performing	- Resource Configuration - Stakeholders - Performance Measures	- Resources - Stakeholders - Offerings
Learning	- New skills - Mindsets	Skills for today & tomorrow
Learning/Performing		Growth Issues: - Performance Measures
Belonging/Organising		- Identity (Mindsets)
Belonging/Performing		Growth concerns: - 'shiny toys' - (Product development vs Aftermarket) - Eng & Service issues
Belonging	- Cultural awareness - SSP-SSC - G-DLogic – S-DLogic	- Identity Issues -
Learning/Belonging		- Leadership - Identity Issues

Moreover, despite, some scholars' contention of the folly of 'boxing' into predefined, disparate and rigid thematic categories (Chia and Nayak, 2017) those challenges identified within the case study, and despite reducing their complexity into '*ever smaller, static, and dichotomous categories*' (ibid, 2017, p. 129), are nevertheless opined by this researcher as an appropriate method to capture visually the complexity, interrelatedness and dynamics of the challenges identified from the dialogic analysis, and offer a novel framework in which an exploration of their impact can now be undertaken.

Why some of the challenges identified from the literature review remain extant within the case study organisation is the focus of the next part of the research analysis and the genesis behind the second part of the research question.

5.17 Analysis of recursive inter-organisational Structural challenges

Whilst acknowledging that organisations are replete with tensions (Smith and Lewis, 2011), reducing management response to simple binary 'either/or' solutions could be detrimental to the organisation's performance and possibly help sustain the ongoing cyclical nature behind some challenges. Consequently, the recursive nature of certain challenges identified in this research raises questions about the traditional pre-emanant management schema of treating all challenges as dilemmas which need to be resolved; indeed, as paradox scholars will contest utilising a binary logic by default ensures that not all tensions can be resolved (Smith et al., 2017).

In this research therefore having identified the recursive challenges facing the organisation (Table 5-1 refers), the researcher next investigated the nature of the tensions embedded within the challenges, identifying the dualistic characteristics behind them, showing their contradictory but also symbiotic character; which so often remain latent within organisations until environmental or cognitive factors bring them to salience (Plester, 2015). These exemplars of dualistic tensions are thus presented as critical contributing factors to the recursive nature of the identified challenges, supporting the contention that paradoxical tensions tend to spur other paradoxes (Fairhurst et al., 2016; Lewis and Smith, 2014)

Accordingly, the researcher, utilising a paradox lens, will explore whether the paradoxical tensions identified present a constitutive feature of a complex autopoietic system supporting the recursive challenges identified in Table 5-1, and as such will aim to answer the second research question, namely:

*"How does the intra-organisational structural challenges of an established servitization organisation compare with those of firms undergoing initial servitization transition, **and why could instantiated tensions within such challenges support their recursive nature?**"*

Moreover, in exploring this latter part of the question it is hoped this study will go some way to answering (Rabetino et al., 2018) call for research to look at conceptualising the paradoxes in servitization.

Consequently, this section will look to focus on the identification of the dualistic characteristics of the tensions within the recursive challenges. Although such a pursuit has been criticised (see Sheep, Fairhurst and Khazanchi, 2017) as hindering our understanding of how the multiplicity of tensions might '*simultaneously emerge, interrelate*' (Ibid, p. 464) and consequently impact their management, in respect of this research it is felt that identification of the paradoxical poles active within the challenges is a useful first step to a better understanding the complexity embedded within these challenges. Moreover, the analysis will also look to conceptualise how their interconnectivity and interrelatedness may further contribute to their recursive character.

5.18 Strategic Intent: Explore - Exploit

Throughout the data gathering exercise there was one clear message from all the participants in relation to the biggest challenge facing the organisation: growth and dealing with its complications. From the researcher's perspective the challenge of delivering on the organisation's growth plans was one mired in its delivery by branches of interrelated challenges traversing between the meso and microstructures of the organisation. These interrelated challenges hid many latent tensions embedded within them which were now becoming salient as senior management endeavoured to deliver on the strategic charge for growth.

Considering the large quantity of data analysed in section 5.1 onwards, the first of the paradoxical tensions identified from the organisation's drive for exponential growth is one that the researcher judges all other tensions stem from; namely the strategic paradox of exploit and explore. Whilst it could be argued that there are other strategic paradoxes that could contend for a place as a generative source of the organisation's tensions, for example, financial performance verse social (Margolis and Walsh, 2003; Smith and Lewis, 2011) or global verse local (Lewis and Smith, 2014); it is the opinion of the researcher that the key to understanding the spiralling interconnectivity and interdependence of

many of the recursive challenges now facing the organisation stems from the mutual interdependence of exploit and explore paradoxical tensions.

March (1991) first identified that organisations 'explore' to attain long-term sustainability, whilst 'exploitation' enables organisations to hone in-house skills and product knowledge to generate greater operational efficiency improving short-term performance (Andriopoulos and Lewis, 2009; Smith, 2014). In terms of the case study organisation, it was clear that an 'explore' initiative was present in its desire for increased market growth, as commented on in Section 5.4.1 to 5.4.2 by several participants in their discourses on growth. In terms of exploitation activities these can be instantiated by comments in section 5.4.7 regarding the organisation's desire to reduce unit costs, and through actions such as standardisation (section 5.3.2) and Lean activities (section 5.6.1), resource alignment (section 5.9.3) and innovative ways of working utilising for example in the present HPC, and in the future digital capabilities (5.2.1).

Accordingly, it is the contention of this researcher that the organisational paradoxes described from this point on affecting the organisation are primarily the result of its exploration strategy of market growth to generate resilient financial performance through increased product offerings and delivery of advanced services whilst simultaneously seeking to exploit efficiencies and standardisation of its extant processes and products.

Moreover, this drive for new market growth brings to the fore the concept of temporality. In this study the CEO's and SLT's drive for growth is presented as one based on a present-future temporal focus resulting from a need to adjust to dynamic environmental factors but delivering on this challenge requires the organisation to meet simultaneously both future needs as well as delivering on its obligations in the present (Smith and Lewis, 2011). Thus, time paradoxes pervade this drive. What such time paradoxes may look like in organisations is explored next.

5.19 Temporal paradoxes in organisations

From Smith and Lewis's (2011) definition of paradox a critical component in its makeup lies in the paradox tension's ability to '*... persist over time*' (ibid, p. 382). Time is therefore critical in defining

what constitutes a paradox and to the effective and efficient running of an organisation, as time shapes its strategy, rhythm and pace; it also provides a construct for individuals to frame challenges and solutions (Orlikowski and Yates, 2002) as well as being instrumental in shaping an individual's everyday engagement in the world. Temporal dimensions therefore can be responsible for the generation of tensions and conflicts across an organisation (Ancona, Okhuysen and Perlow, 2001) as they are a '*defining feature of all change*' (Kunisch et al., 2017, p.1005) and a key constituent of understanding tension's paradoxical nature (Slawinski and Bansal, 2015, 2017).

Appendix I provides an overview of literature relating to time; but for the purpose of this section of the thesis it is important to be appreciative that in using a paradox lens to explore an organisation's ability to simultaneously address persistent competing demands (i.e., tensions) (Lewis, 2000; Smith and Lewis, 2011) there is a need to understand that embedded within such demands are temporal tensions. This research contributes to the paradox debate, recognising the paucity of research into temporal tensions (Slawinski and Bansal, 2017) using a paradox lens, and particularly in relation to servitization studies, which in fairness have generally viewed time from a somewhat linear perspective.

In this research temporality and paradox are seen to be intertwined in many of the servitization challenges identified in Table 5-1 and can be presented across 5 temporal dimensions which are set out in Table 5-2 and examined individually below:

<i>Temporal Dimension</i>	Tension	References
<i>Ontology of time</i>	Objective vs Subjective	Orlikowski and Yates (2002)
<i>Temporal perspective</i>	Clock time vs Event time	Crossan, Cunha, Vera and Cunha, (2005); Reinecke <i>et al</i> (2015)
<i>Temporal focus</i>	Past vs Present vs Future	Kaplan and Orlikowski (2013)
<i>Temporal Depth</i>	Short-term vs Long-term	Laverty <i>et al</i> (1996); Hahn, Pinkse, Preuss and Figge (2015); Slawinski and Bansal (2015)
<i>Speed</i>	Fast vs Slow	Slawinski and Bansal (2017)

Table 5-2. Organisational Time Dimensions (adapted from Slawinski and Bansal, 2017, p. 375)

5.19.1 The Ontology of Time.

In this research, the first temporal dimension identified from participants discourse relates to ontology of time. This viewpoint relates to an individual's perception of time as being a fundamental dichotomy between objective or subjective realities (Orlikowski and Yates, 2002). Objective time is independent of human experience (Slawinski and Bansal, 2017) and is something that can be coordinated such as organisational working hours and coordination of activities, such as meetings and reporting cycles.

Conversely, subjective time is ascribed to how humans experience and interpretate events differently (Reinecke et al., 2015), with some seeing events from a past perspective while other focus on the future. A review of literature highlights that objective and subjective time are rarely studied simultaneously (Orlikowski and Yates, 2002; Slawinski and Bansal, 2017). An example of such orientation can be seen in interviewees concerns over reporting metrics and reporting cycles, contrasting objective time – organisational pre-planned reporting cycles and metrics with subjective time – how individuals assess both the veracity and usefulness of these reporting cycles.

5.19.2 The Temporal Perspective.

Temporal perspective relates to an organisation's inclination to clock time or event time. Such a perspective is observed in this study and can be recognised for example in comments directed at differences in perception of engineering practices and those associated with service delivery.

Engineering practices refer to the established tenants of 'clock time' which sees time as linear and discrete with activities being divided into activities scheduled over a days, months, or years.

In contrast, event time can be more associated with managing the delivery of services. Here activities are determined not by a schedule but are continuous shaped by customer needs and demands, i.e., process orientated (Bluedorn and Denhardt, 1988). A clear example of this conflation between engineering activities and services was neatly captured by one interviewees observation that services personnel were having to work overtime to keep up with customer demands whilst those working on

the 'shiny toys' manufacturing processes were presented as working to a rigid 'clock-time schedule' of start at 0900 and "*I wash my mug at 4:10pm and I go home at 4:15pm*" (**Interviewee B27**).

5.19.3 Temporal focus.

Temporal focus relates to the importance organisations place on the past, present, or future (Nadkarni and Chen, 2014). In this study, an example of the past contributing to the present focus can be observed by participants referent anchor points to the history of the organisation and the sense of pride many identified with the organisational past and how that has contributed to shaping shapes their current identity, and while organisations can accommodate more than one temporal focus research shows that it is likely that an organisation has a dominant one (Slawinski and Banal, 2017).

In this study, an example of conflicting temporal focus can be seen in the G-DLogic of manufacturing, which arguably is the dominant focus in this case study, and exposed in the organisation's stated desire for efficiency today at possibly the expense of organisational learning in the future, and presented in the dialogues regarding the perceived need for standardisation of products and offerings on the one hand (present focus) with the desire on the other to utilise future digital data capture to enable future innovative bespoke offerings to be created to meet customers changing needs (future focus).

5.19.4 Temporal Depth.

Temporal depth refers to discussions over short-term planning and decision-making versus more long-term planning with organisations often criticised for their short-term orientations (Martin, Wiseman and Gomez-Mejia, 2016). In this study, participants acknowledge both time horizons, for example, in comments about 'shiny toys' being "*jam for tomorrow*" (Interviewee A5) whilst real value could be achieved through a modification to legacy fleet aircraft 'today'. There are also examples within the analysis on participants' views concerning the length of time it takes for decisions to be made. For example, some interviewees saw the organisation as "*glacial*" (Interviewee E14) in decision making, often due to its reliance on quantitative data (Interviewee B9) but hope that the development of CSCs will speed this process up (Interviewee B6). Clearly organisations need to take actions that will deliver

sustainable long-term value (Porter, 1985) but need to balance that desire with the requirement to deliver short-term financial earnings in order to survive (Van Der Stede, 2000).

5.19.5 Speed (Fast vs Slow).

In the literature another temporal dimension to be considered is speed which predominantly relates to decision-making in organisations (Slawinski and Banal, 2017) and the speed with which individuals accomplish tasks (Onken, 1999). In this study, comment on this dimension typically range from organisational response time to customer queries to general decision-making of the organisations leadership, with views variegated between 'improvements being seen' to decision-making being 'glacial'. Again, both interpretations appear valid in the context of this business where the dichotomy of managing stable engineering operations while simultaneously having to deal with the organic nature of service operations naturally brings conflicting demands in terms of decision-making speeds.

To summarise, time is essential to the organising of a firm, but too often the notion of time is one that is discussed in terms of binary contradictions, for instance short-term or long-term thinking, clock time or event time, and as such are often presented as trade-offs in which a researcher can explore one element or the other but not *'the generative properties of the opposing elements interrelatedness'* (Slawinski and Bansal, p. 373).

However, in this research using a paradox 'lens' to uncover the tensions embedded within the challenges identified in this research, means accepting that time is a crucial component in the research. Moreover, as paradox research is about considering contradictory elements as simultaneous, interrelated, and persistent, temporal dimensions are therefore apodictic to improving our understanding the recursive nature of the challenges identified in this study. Accordingly, this researcher recognises the *'pluritemporalism'* nature of time within the case study organisation (Nowotny, 1992, p. 421) and that time is pervasive in all the tensions that are discussed in this chapter.

5.20 Bringing back complexity to servitization understanding

Scholars of paradox theory acknowledge that paradoxes occur concurrently (Tracy, 2004; Andriopoulos and Lewis, 2009; Jarzabkowski, Le and Van de Ven, 2013; Sheep, Fairhurst and Khazanchi, 2017) and

rather than seek simplicity in their understanding what is now needed in research is to bring back the complex nature of this entanglement (Sheep, Fairhurst and Khazanchi, 2017).

Accordingly, the remainder of this chapter will attempt to identify from the analysis of the '*multiple readings*' (ibid, p. 465) of the inter-organisational structural challenges, identified in Table 5-1, the paradoxical tensions embedded within them. This will be achieved by exploring the recursive challenges under the organisational thematic tensions of Organising, Performing, Belonging, and Learning, and then identifying the dualistic tensions that could be contributing to their recursive nature.

The first to be considered concerns the interconnected paradoxes within the Organising theme that contribute to recursive nature of its identified challenges and is discussed below.

5.21 Organising Tensions

This section discusses those recursive challenges identified within the intra-organisational structural theme of Belonging and the interrelated tensions sustaining them (Figure 5-7 refers).

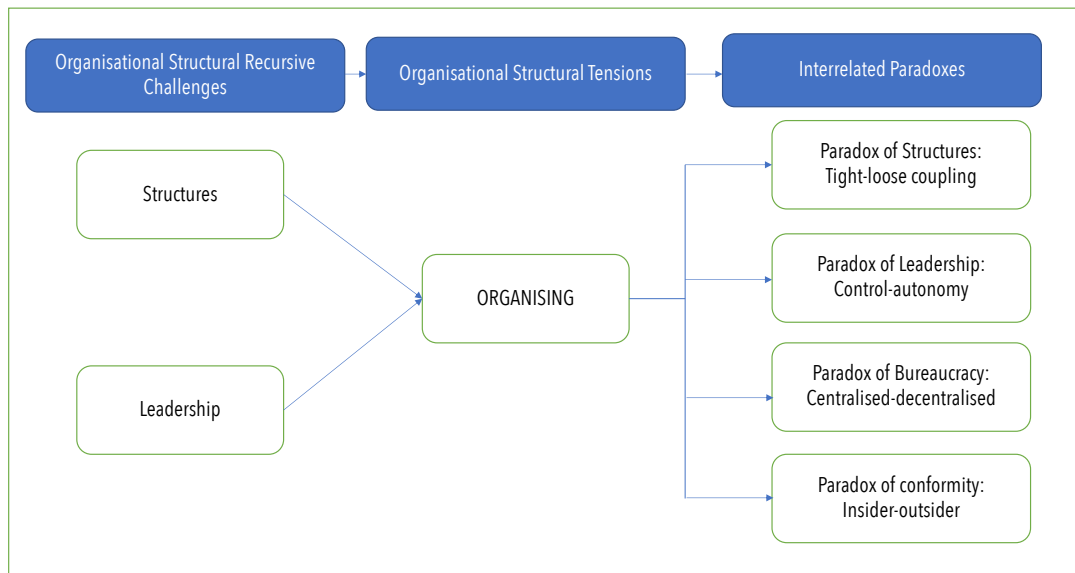


Figure 5-7. Interconnected paradoxes within Organising challenges

Smith and Lewis (2011) present organising paradoxes as an inevitability of '*complex systems creating competing designs and processes to achieve a desired outcome*' (ibid, 2011, pp. 383-384). In terms of the case study the four tensions identified which support the recursive challenges of structures and leadership are identified as the paradoxes of: Structures, Leadership, bureaucracy, and conformity. Each of these tensions are now examined in turn.

5.21.1 Paradox of Structures - Tight/loose coupling

Getting close to customers was a phrase touted by many interviewees as the *raison d'être* for the organisation's establishment of its global CSCs, and as a management concept customer closeness is one supported by numerous scholars (for example, Peters and Waterman, 1982; Baines and Lightfoot, 2013) as an effective means of building relationships and delivering quicker responses to customer needs. However, there have always been dissenting voices to this concept from the very beginning, Hamel and Prahalad (1994) for instance talk of the tyranny of the served market with Slater

and Narver (1998) arguing that customer led initiatives are nothing more than a short-term strategy for organisations.

So, how can an organisation make sense of this contradiction? In describing this paradoxical situation in the case study, the researcher employs the notions of tight and loose coupling. A loosely coupled system, according to Danneels (2003) is one describing where *'elements are connected, but are not fully determined by the elements with which they are linked'* as opposed to a tightly coupled system, where *'elements are strongly mutually dependent, constrained, and determined'* (ibid, p. 560). Accordingly, from the perspective of organisation–customer interactions, associations with customers are said to be either loose or tight. Such a bimodal coupling can present a paradoxical tension in an organisation for whilst tight coupling offers opportunities for a better understanding of customers' needs, loose coupling is constitutive if an organisation wishes to remain adaptable to dynamic environments, opportunities, and threats (ibid).

The challenge of closer integration with customers was highlighted in several participants' comments, touching on the fact that today due to the organisation's tight customer coupling the dynamics between the organisation and its customers was shifting to one where customers now seemed to have a greater influence on the organisation's operating model:

'British airways ... Singapore airlines are a good example of that... very demanding, very proactive and very challenging and quite often 'shake the tree' and say, "look I think you need to look at this! I want more flexibility here, I don't want to be tied in on this I want you to cover a bigger scope, for instance there are bits on the engine that you keep exclude and it's a pain in the arse that I have to look after them and I am not going to do that anymore funded by your product"

(Interviewee B27)

Tight coupling is said to generate self-validating and compelling interpretations of the world (Weick, 1982) and as a result, organisations tend to produce increasingly specific definition and hierarchical structures of 'who their customers are', with priority of resources often given to meeting the needs of those customers at the top end of their customer list:

"... So, we don't do it at the moment to the point of really penalising a customer, but I am already treating one customer different from another because I make more money out of them...."

(Interviewee D13)

Furthermore, tighter coupling with customers was enabling their influence to spread to how and when the case study organisation was able to deliver its services and as such was a root cause in the frustration expressed by some as the aporetic conflict of trying to meet customer expectations whilst simultaneously deliver on internal revenue targets:

'It is going to be tough, and there will be increasing focus on us to work with customers to stagger things like shop visits, to stagger our costs, we might be asked to pull forward shop visits or we might be asked to push out shop visits... and if the customers don't want to, we are stuck! And if they are in their peak summer period where they are absolutely sweating the assets to get every penny out of them, and we say can you put that down to 2 days so we can do an engine change and we can bring it into the shop it's just not going to happen...and this can impact our revenue forecast!'

(Interviewee C16)

In essence, organisations can be said to actively create their business environment and as such can be successively impinged and constrained by it (Miller, 1993; Weick, 1979). The overriding desire of the case study organisation for a tight coupling orientation to customers is clear in its establishment of CSCs around the world; however, there is the potential for the firm to get too close.

As highlighted by several interviewees by focusing exclusively on existing large-scale customers the organisation is balancing the allocation of resources more on how "big" the client's business is and not necessarily on 'all' customers' needs. All of which questions the validity of a customer 'excellence' approach so often mentioned as key to the organisations business plan. From a paradox perspective the organisation needs to balance tight and loose coupling to avoid the traps mentioned. Tight coupling is acknowledged as essential to exploit the organisations commitment to its current customers but adopting simultaneously loose coupling would enable the organisation to be more flexible and capable of exploring the attractiveness of alternative customers rather than focussing resources on 'who shouts loudest'.

The current zeitgeist in scholarly thought stresses the value of tight customer orientation for firms by getting closer to them, by satisfying them ever more, and building long-term relationships with them (Johnstone, Wilkinson and Dainty, 2014; Lienert, 2015; Raja et al., 2013), and is best utilised by firms operating in relatively predictable environments where it is most important to take care of a stable served market; however, the market environment that the case study is operating in has arguably moved from relatively stable to a more dynamic and challenge one; as Hamel and Prahalad (1994) note the temporal dimension is now a need to respond by simultaneously balancing the desire to meet the needs of current customers with that of directing their attention to their customers of the future, recognising that *'Although it is important to ask how satisfied my customers are, it is especially important to ask which customers are we not even serving'* (ibid, 1994, p. 111).

5.21.2 Paradox of Leadership - Control/autonomy/empowerment

Maintaining control through hierarchal structures and defined positions of authority was in the past the dominant logic within organisations (Bloodgood and Chae, 2010); however, many organisations have found that today's environment is not always conducive to the application of rigid control mechanisms, resulting in a greater appreciation of the value of autonomy/empowerment in organisational management.

Ryan and Deci, 2000 define the concept of autonomy in terms of individuals or groups experiencing *'integration and freedom'* (ibid, 2000, p. 231); however, as Tyler and Blader (2005) note organisations conversely rely on its employees to follow rules and procedures, which they maintain is best done through management controls. Indeed, Harris and White (1987) contend that in any large, complex organisation the default management system is often one of command and control, despite studies showing such rigidity can have adverse effects (Gilbert and Sutherland, 2018).

In this study, participants' held contrasting views on the subject. Some believed the organisation had moved away from the rigidity of command-and-control structures to a more empowered model of greater flexibility and autonomy:

'We have certainly had a change in... umm... a change away from a very command and control type of leadership to a ... (pause).... moving towards a (laughter)... an empowered distributed power model...'

(Interviewee A5)

However, to others command and control was still seen as the dominant management approach:

'So maybe there is too much command and control, but it is a disease... It is probably the issue for me that we have been too slow to address.'

(Interviewee C12)

The concepts of autonomy and empowerment are well researched management disciplines and take as their central premise the idea that employees can achieve results through their own initiative and independence. Indeed, research has shown that in granting employees or groups increased autonomy often leads them to professing greater job satisfaction and are often presented as having a greater chance of delivering sustainable high performance (Pink, 2009). However, despite such support for empowering employees the adoption of rigid organisational control mechanisms nevertheless remains a core management practice too despite studies advocating it can be stifling and suffocating, limiting an organisation's ability to operate efficiently in complex environments (Ritzer, 1993).

Moreover, organisation's promising empowerment initiatives but failing to deliver on them, can give rise to employee cynicism (Brown and Cregan, 2008) and increase organisational tensions for despite an organisation's best intention delivering on empowerment/autonomy essentially means some form of (re)distribution of power in organisations (Maynard, Gilson and Mathieu, 2012), yet research on leadership has shown that it is not uncommon for key actors to be reluctant to relinquish power, control, and autonomy (Yukl and Fu, 1999).

Scholars such Gilbert and Sutherland, (2018) and Gupta, Smith and Shalley, (2006) acknowledge the necessity of balancing the seemingly contradictory tensions of autonomy and control as businesses face exponential complexity within their business environments, but the question remains, is it possible for organisations to balance these two seemingly contradictory and conflicting management views? In assessing the case study organisation, it would appear from various participants comments that there is definitely a drive underway for a more empowered management approach in parts of the

organisation and such a shift from a coercive bureaucracy to a more agile one, is arguably needed as the organisation's operational environment can no longer be deemed one that is stable and predictable (Weick, 2004).

From this researcher's perspective the perceived management tension between autonomy versus control was represented by many interviewees in binary terms of an organisational dilemma as "either one or the other"; rather than seeing them as paradoxical tensions that '*can and must co-exist to form a powerful management tool*' (Gilbert and Sutherland, 2018, p. 11). However, in the analysis of the interview data it was apparent that a tension still exists between control and autonomy views. Indeed, one interviewee captured the nature of the debate neatly thus, "*are we an autonomous and empowered organisation or is our default management system still one of command and control... I think the jury is still out?*" (Interviewee E30).

5.21.3 Paradox of bureaucracy - Centralised/decentralised

Linked to the tensions of control/autonomy and tight/loose coupling is that of centralised/decentralised structures. Burns and Stalker (1961) distinguished between two organisational designs: Mechanistic and organic and whilst a mechanistic approach may suit a manufacturer focused on the repeat production of a product, a more organic style may suit a servitized firm delivering a service where greater task uncertainty and variety exists (Turunen and Neely, 2012).

Accordingly, to create a competitive advantage, firms need to determine their occupational configurations are not only internally consistent, but also appropriate given the environment they are operating in. Whilst scholars may agree that an organisation's structure plays a significant role in the search and exploration of new opportunities (Schoonhoven and Jelinek 1990), views differ on just what constitutes optimisation in terms of organisational structure. Some scholars suggest that the only hope an organisation has to create a major shift in a firm's competitive landscape is through the establishment of an independent business, decentralised from the parent company and free to pursue new opportunities (Christensen, 1997), others such as Tushman and Reilly (1996) posit that organisations are capable of simultaneously engaging in a mix of new, exploratory initiatives whilst

simultaneously continuing to pursue existing initiatives within the organisation's extant structural design.

At Section 5.6.2 within the participants' dialogues there appeared to be a strong divergence of views on this subject. Some felt that the organisation retained a mechanistic and centralised structure, contributing to views that the organisational power to shape, sustain and direct activities to still resided with the 'mothership' and its Derby centric approach to management:

'Umm... thinking pause (laughter)...That is another very interesting question! Fundamentally I think a lot of the senior leaders of the company are in Derby, so it is a Derby centric company ... So, the relationships between, and it is a really bad expression, but satellite sites and mothership are a fascinating one!

(Interviewee D22)

"[Name of case study organisation] I would say is definitely Derby centric, it has an almost "shires' type culture to it"

(Interviewee E17)

Alternatively, others perceived the establishment of the CSCs as signifying the organisation was changing with a more organic structure developing:

'I would say that certainly within [the] customer and services team we are less Derby centric than we have ever been because we have now set up these four CSCs (Customer Service Centres: Singapore as part of the Asia Pacific Customer Regional Team, Washington for Americas, Beijing for China and we are about to do one for Abu Dhabi for Middle East & Africa) over the last three years as part of our customer closer initiative to get closer to our customers...'

(Interviewee E20)

Although, even with the acknowledged establishment of the CSCs there remained in certain quarters an undercurrent of opinion who perceived life was easier having everything centralised from the Derby 'mothership':

'It was easier when everything was run out of Derby, at the moment the blokes who are overseas used to be based here... so that's great, it's nice and simple... the guy I used to work alongside is now my colleague in Beijing, in Singapore, in... in Washington, or in Abu Dhabi, dead simple! Well roll forward 10 years and suddenly we are quite rightly wanting to recruit more locally, but these people will be different from the Derby raised people...'

(Interviewee B4)

On close examination of the case study organisation's structure it appears to retain some of the characteristics of a traditional engineering led line-organisation with its hierarchical levels and middle managers, and authority flowing from top-to-bottom; however, interestingly, throughout the interviews not one of the participants could point to the location of an organisational diagram or even confirm that such a thing existed; instead when asked to explain how they understood the organisational structure it was framed in reified terms as either a triangle or three-legged stool (see Section 6.3).

What is clear from the dialogical statements within this research and previous studies on organisations is that the dynamic process of adjusting to environmental changes presents organisations with enormous challenges in their efforts to achieve high performance as organisational structures' need to fit one or multiple contingencies, for example Burns & Stalker advocate organic structures for dynamic environments, such as those delivering service centric activities, yet in an organisation that still retains conventional production and sales of products, they recommend a more stable structure as advantageous. As such this bifurcation of activities between products and services can present bureaucratic challenges due to the need to balance conflicting business logics.

Initially, it was difficult for the researcher to see such a structural divide as the case study organisation appeared on first inspection to be a single entity, but as the research progressed and analysis of participants comments was undertaken it became clear that internal sub-units exist to support a multiplicity of markets and TotalCare offerings and consequently the organisation needed somehow to integrate its divergent activities into a structure that could accommodate the delivery of integrated solutions.

However, despite numerous organisational change and transformation initiatives designed to support the organisation's ability to deliver integrated solutions to customers, from participants' comments there nevertheless exists some internal complexities and inconstancies in managing such a structure. The perception of siloed structures, and the impact they can have on the organisation has been

commented on within this thesis in areas covering the challenges of both process and structure alignment, whose failure has often been presented within this thesis often as impeding the efficient completion of the organisation's business, compounding effective decision-making, and supporting functional, atomistic, vertical performance measures rather than horizontal measures. Consequently, despite numerous transformation initiatives, failing to balance the dualistic tensions of a centralised and decentralised structure has resulted in frustration expressed by many participants, an example of such comments is below:

'Partly the reason the pace of our decision-making is so bad is we were so siloed'

(Interviewee E15)

'the biggest challenge that I face in my current role is the ...organisational structure...and the silo mentality it breeds...'

(Interviewee E17)

The tensions identified under this topic relate to the perception of organisational design. To some participants the organisation displayed the characteristics of a stable, centralised design, one firmly entrenched in the engineering historical norms of 'Derby' dominated behaviours, processes, and traditions, whilst others saw it as one moving to a more organic structure with decentralised powers. The latter view is in line with Neu and Brown's (2008) contention that servitization requires a decentralised structure for decision-making whilst balancing the separation and integration necessary in the design and build of products and service offerings to satisfy customer needs.

What was interesting from the interviews was that opinions on the merits of centralised-decentralised structures were heavily influenced by an individual's functional role and arguably mindset; presenting the perennial struggle between the two contrasting business logics so intertwined with servitization: that of G-DLogic and S-DLogic. The exploration of mindset as a tension will be explored in greater detail later in this thesis but infers already how the paradoxical nature of tensions can be nested in more than one challenge.

From a paradox perspective, and as Perrow (1977) contests, an '*efficient organization is both centralized and decentralized*' (ibid, 1977, p. 14). The analysis of the informant's comments would appear to show

that to some an attempt by the organisation to operate an 'and/both' model was in operation; however, to others it remained a centralised, Derby centric and stove piped organisation, questioning whether such a dualistic approach had been achieved or was even possible.

5.21.4 Paradox of Conformity: Insider-outsider identity tension

The next paradox to be addressed under Organising tensions relates to the paradox of conformity and, specifically, in the case study context, the paradox of insider-outsider identity. Discussions on identity and identification are frequently defined by academics in fixed terms; however, as far back as Alberts et al (1988) posited that the terms are in fact more fluid, and moulded by social discourse and context (Bruskin, 2019). Pratt (1988), in support of Alberts contention of fluidity, argues that the lines between our understanding of what constitutes organisational insiders and outsiders are in fact diffuse: '*... it is clear that this aspect of identification may become increasingly important as our notion of what an 'organizational member' is becomes broader and the boundaries between organizational insiders and outsiders become more diffuse*' (ibid, 1988, pp. 174-175).

In the context of the case study, the question of what constituted an 'outsider' appeared not so problematic to some of the participants (insiders), as can be seen in dialogic comments captured below; to these 'insiders' it was namely anyone who had no previous knowledge of the industry or organisation and had in fact been brought in from the 'outside' specifically for that reason. However, the use of such 'outside' personnel had raised concerns with some interviewees. Specifically, anxieties were raised about such individuals' lack of understanding of the contextual environment in which the business operated and, perhaps to some more importantly, of a lack of historical awareness of the organisation and thus its culture:

'So, why do I say that? So, [CEO] has been in position for a couple of years, but there are very few people now on ELT (Executive Leadership Team) that know Civil Aerospace, so good and bad in that... however; do they know what is the beast that you are trying to wrestle with? Do they actually understand it? ... as outsiders I am not sure they do'

(Interviewee E21)

'... we have had a lot of ... leadership change ... in recent years ... and a lot of first line members that [the CEO] has brought in from outside, ... that can mean that they have different priorities,

different things that they want to drive and believe are important from an organisation perspective, and that has a huge kind of butterfly effect on the rest of the business in terms of we were going in one direction, and now we are kind of moving in another direction!' So, we have gone from a position where you had your [name of previous CEO] ... they were the life blood of [name of case study organisation], they had been through it and understood the heritage and now you have these new people coming in and it is almost a kind of power struggle between them and the organisation.

(Interviewee E26)

The dialogic statements above are representative samples of a significant body of feelings expressed to the researcher which can be characterised as a paradoxical tension of conformity, where those employees (the insiders) are now associating organisational changes and tensions as being the result of outsider's power games. By using phrases such as "outsiders", "competing agendas" and "power struggle" to describe the SLT, such narratives emphasise a confliction of identity, presenting an important, if subliminal hint at a paradoxical tension of 'outsider-insider' organisational construction.

This tension was expressed by interviewees through identity construction (employing a temporal focus on the past) reflecting on how previous members of the SLT had worked their way up-through the business, enabling interviewees to feel a sense of homogeneity with them (they are one of us!), as opposed to the "*external people*" (Interviewee E15) now seen as dominating the SLT - portrayed as individuals vying for power with competing agendas and unrelated to the organisational identity cherished by so many of the interviewees.

Such normative statements presented represent a paradox of conformity in which the usually blurred lines of 'insider', 'outsider' have become more salient as employees began to feel the impact of a challenging and changing business environment, adjusting to another organisational transformation change programme underway and poor financial returns.

The case study organisation has a strong tradition and strong global brand for excellence in engineering; something that is a source of pride for all the participants spoken to in this study. However, whilst organisational challenges can unify individuals in a homogenous collectivised identity, it can also present opportunities to exaggerate and highlight differences. Both identity theory

and social identity theory recognised that situation contexts have a considerable part to play in the building and reconstruction of roles (Bruskin, 2019) and certainly during the period of this research the organisational environment was one of considerable turbulence which may go some way to contrasting the normal fluid nature of identities to that of the defined 'us' and 'them' perception expressed by many interviewees. However, managing conflicting identities is essential as in times of crisis organisational identity can be a glue that holds the company together, when individuals believe in both those who lead their organisation that collective strength can be the difference between survival and failure.

5.22 Performing Tensions

The following section discusses the recursive challenges identified within the intra-organisational structural theme of Performing and the interrelated tensions sustaining them (Figure 5-8 refers).

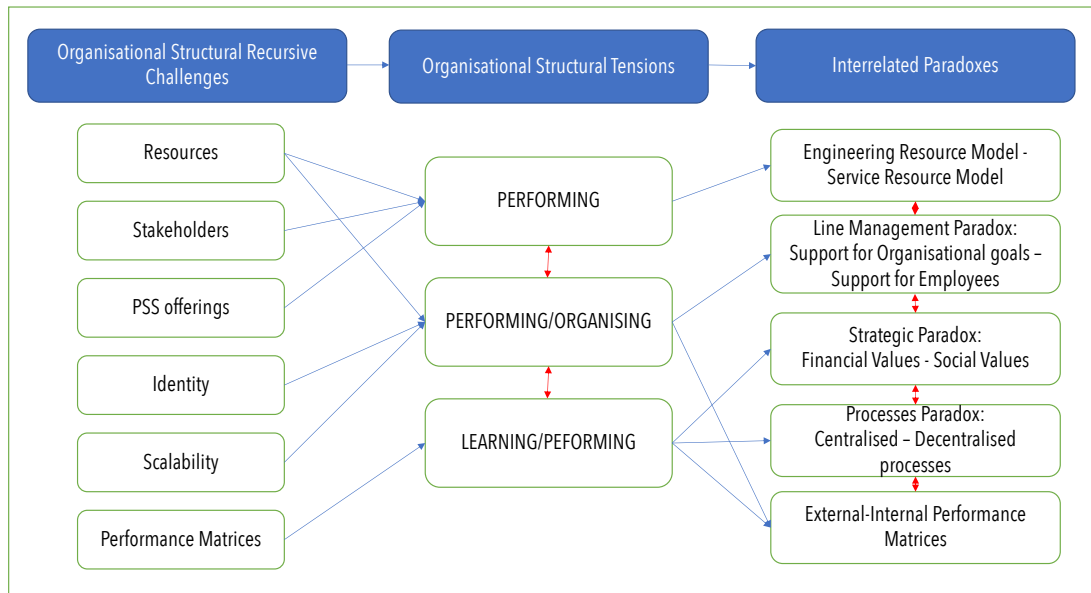


Figure 5-8. Interconnected paradoxes within Performing challenges

The tensions around performing in organisations typically relate to the plurality of stakeholders, both external and internal, and their often competing goals and demands (Lewis, 2000; Smith and Lewis, 2011) whilst tensions around Performing/Organising, and Learning/Performing can be summarised as the organisational conflicts between meeting employee expectations and customer demands, and building capabilities for the future whilst retaining key skills necessary for success in the present (Smith and Lewis, 2011).

In terms of the case study the thematic tensions mentioned above have their conflictions laid bare in dialogical comments from participants ranging from: struggles with understanding resource allocation, the impact of the SFO case, conflicting empowerment, and control messages in relation to diverse stakeholder needs and internal trade-offs between competing financial authority levels. These tensions are now examined in more detail below.

5.22.1 Paradox Management: Engineering Resource Model – Services Resource Model

Few scholars, one could argue, would take issue with the statement that one of the key strategic decisions senior management need to make concerns the effective and efficient allocation of resources (Maritan and Lee, 2017). Indeed, Chandler's (1962) discerning insight on business strategy and achieving organisational goals posited defining a resource strategy as '*necessary for carrying out these goals*' (ibid, p. 13) due to the fact that they directly contribute to how an organisation creates value.

Consequently, as Hofer and Schendel (1978) noted one of the essential reasons for firms to therefore formulate a resource strategy was to enable them to '*assist in the allocation of discretionary strategic resources*' (ibid, 1978, p. 5) to enable them to operate effectively and efficiently leading to the generation of revenue and ideally profits. However, within the case study organisation there was in some quarters concern that resource allocation was far from strategically managed, as these two senior managers explained:

How are resources allocated ... umm... Very badly! I would say... I haven't seen, although it might exist, but I suspect it doesn't, I haven't seen anyone who has actually got a full view of resources versus load across the company.'

(Interviewee B6)

'So, one of the reasons, or probably the key reason, why we are struggling on some of the programmes is we have real constraints in some of our fundamentals... some of it is in our resources and in particular skill groups... Umm...So, resource is very much up here at the minute! ...umm...but I do worry that we play a bit of a numbers game, and I just don't think we are that good at understanding what resource we need... and we're just not that good at it!'

(Interviewee E19)

In discussing with participants, the researcher's observations on their comments, one key area of tension agreed upon related to how engineering resources were justified and allocated versus the process of justifying personnel engaged in service activities. Many within the services functional areas of the business had a clear perception of one dominant logic being applied for planning assumptions on two divergent work needs. For those engaged in engineering activities a G-DLogic of load planning based on 'task load' requirements were cited as efficient and effective to justify resources; however, for

those involved in service activities the allocation of resources based on 'task loading' was seen as incompatible with the nature of some of the activity's services undertake:

'Yeah, I don't think we are very good at that. I think, certainly at a programme team and management perspective we are getting better, so they are able to say that this is the tasks that I have got to do, this is the time it will take me to do it, and therefore that's how many people I need...I think we are getting better at that! However, in the services arena this is a little bit harder to do because you don't necessarily know what may or may not be coming in, and that could be any kind of a task...so it is difficult, I don't think we have created an understanding of prioritising our tasks on occasions and making sure we have got the resource committed to it!

(Interviewee E18)

Consequently, some interviewees felt strongly that engineering manpower calculations for service activities was problematic, for despite a recognition that demonstration of value is important; unfortunately, the very nature of many of the activities of delivering advanced services largely go unseen, and unlike many of the production activities within product manufacturing, which lend themselves to discrete activities which can be monitored and measured, such apodictic certainties are not so easily defined within services:

'on the customer side at the moment we have no ability to record task or whatever. Load planning does not exist because we have no record of load.'

(Interviewee B6)

'yes, it is very hard to explain and justify resource outside of engineering. We end up being treated like an overhead ultimately... '

(Interviewee E18)

'I can sympathise having be in many resource allocation meetings and seeing the frustration on people from the services side when you talk about getting access to resources. In engineering it is easy in the sense that you have an engineering manpower calculation, and everyone agrees with it and you can assess your need prior to undertaking work and build in the cost, but for people engaged in services it is harder as how can you assess the workload until it comes in?'

(Interviewee E26)

The dialogical comments above would seem to indicate resource allocation in terms of a differentiation rather than integration tension, one shaped by organisational power and politics, heavily influenced by the company's engineering heritage (temporal focus on the past) in regarding resource planning.

However, frustration with how resources were allocated was not confined to those engaged in discrete service activities, but was also voiced by those within broader project team activities:

'There is a lot of talk now of 'wicked problems' and we have a wicked problem with our resources! The business has said we are a priority, we are number one, everyone has been told they are to 100% allocate, everyone has been told they have to take resources off other projects and put them on to us, so that has been very clear from the top of the business and yet when you trickle-down it is not happening! So, I sat in on one of these resource meetings and asked what is happening and it was like they had a good story for every one of my resource gaps...so have I got the numbers wrong or am I just listening to a lot of sob stories, and I am bit soft? (Laughter)...'

(Interviewee E19)

'So, the biggest tension I see is allocation of engineering resource. The allocation of people to do the work, so with all the NPI programmes we have got going on we tend to push all are people towards that and the fleet programmes get what is left and we are left in the difficult space of having to manage failing a commitment to customers and things like that, or solutions not being right first time, and various other things; so that is the biggest tension I see.'

(Interviewee E15)

In analysing the dialogues reflecting anxieties over resource modelling, the researcher argues that what is being expressed is a paradoxical tension between two divergent logics in which the integration of a single engineering dominant resource model is problematic due to the nature of the contrasting competencies between those staff operating within a product business setting and those operating within a service setting.

An observation from the literature analysis was that despite acknowledgement within much of the servitization literature that manufactures wishing to move to a servitization strategy will be required to undertake changes to many of their business areas, including designing adequate processes and recruitment of staff with the high level of technical and relationship complexity required to keep customers engaged and satisfied (Lightfoot, Baines and Smart, 2013), there appears still, surprisingly a paucity of strategy research '*specifically about the allocation of financial, physical, technological, and human resources that support firm strategies*' (Maritan and Lee, 2017, p. 2412) despite acknowledgement that altering a firm's resource base to support servitization is challenging, with

manufacturers attempting to do so facing a number of issues (Huikkola, Kohtamäki and Rabetino, 2016).

Within the case study organisation one such issue was identified as the organisation's resource configuration process, in particular a tension highlighted by those operating within the service arena on the unfairness of operating an engineering resource model, based on task-load modelling, rather than one that recognises the distinctive capabilities and characteristics of their roles. If the delivery of servitization requires the integration of both production and service components for the organisations offerings to be viable, then such an amalgamation necessitates an "AND/BOTH" approach when it comes to resource modelling, which in light of the interview analysis is palpably absent in the case study organisation, resulting in the ascribed paradoxical tension.

5.22.2 Line management paradox: Support for organisational goals – support for employees

Linked also by the issue of resource planning was an attendant tension examined that of management trying to balance the needs of increased workloads on staff whilst simultaneously ensuring their welfare. Smith and Lewis (2011) suggest that individuals are presented with and identify tensions when faced with changing environmental conditions defined by '*plurality, scarcity, and change*' often rendering '*latent tensions salient*' (Ibid, 2011, p. 390). During discussions it was clear that the drive for growth and the apposite increase both in customers' and their demands was causing some in the services area to struggle, primarily with a scarcity of appropriate resources. This tension has links with a cognate concern with a previous observation on resource planning together with underlying legacy issues from the restructuring activities of the organisation's transformation programme and its significant headcount reductions.

In the context of the case study organisation these changing environmental conditions had left some senior managers struggling to balance 'work and life commitments' not just for themselves but more importantly for their staff. What was interesting from their discourse however was despite acknowledgement that 'staffing' had been a problem for some time in the organisation, when asked

what they had done about it many adopted an almost meta-narrative citing an unwritten praxis within the organisation of not asking for assistance, for fear of either rejection or being seen as a weak leader:

'We have almost become ingrained in the idea that we must not ask for more headcount...'

(Interviewee E20)

'... the climate for all of us for the past four or five years has almost been "well don't bother to ask because you know the answer is going to be no", and if you do ask your probably be seen or worry that you are a bit out of step with what the leadership is supposed to be doing by almost daring to ask for a headcount...'

(Interviewee E25)

However, the situation in some quarters was now getting critical, as the increased workload in certain service areas of the business, together with what many described as enforced resource constraints and an ineffective resource processes was seeing this increase in workload falling on a finite resource:

'We cannot just keep saying one more time to people people cannot physically do it anymore ... that really simply is now coming back to hurt us as a business...'

(Interviewee E26)

'There is definitely a resource constraint at the moment ... you have the increased levels of work, but you are just doing it with fewer people...there is just a lot of 'hay on the fork' at the moment.'

(Interviewee A10)

If you were to look at how many customers we had 10 years ago and say how many people have we got in the customer business team managing the deals and the contracts, we must have at least double if not triple the amount of customers per head to manage each of those customers then we had 10 or 15 years ago is my sense, and I can tell you the processes haven't got 300% more efficient over the past 15 years ... so, I think we are now in a position where we actually need more 'worker bees'... I don't think we need more managers or senior managers we just need more people in our teams to get on and do stuff for us!

(Interviewee E20)

For the case study organisation, the success its various TotalCare offerings necessitates the extension of its operations with customers for an extensive period of time (10,15 and 20 years are not uncommon) with a consequential rise in customer engagement over this time, more so than a tradition product-only manufacturer (Baines et al., 2013). Accordingly, to meet this change in operations there is a need for those customer-facing staffs to possess the complementary skills of technical/product knowledge

and relationship building skills to enable effective customer management, what Lee and Lee (2007) referred to as T-Skills.

However, such skills are not easy to resource, and within the case study organisation they required considerable in-house development. Consequently, concern from many participants was that not only was the increased workload unsustainable on current resource levels, but more worrying was the detrimental impact it was having on these operant resources health and identity with the organisation's values, both of which could challenge staff's future commitment to the company:

'[the company] rely on those of us who understand the business to keep what to be honest feels like quite a house of cards from falling over because we're all quite stressed, because people here are more stressed and now, we all seem to be working longer hours than I have ever seen before... this is not sustainable or fair on managers trying to balance these demands or staff having to work the hours to meet the commitments! '

(Interviewee E20)

'There are a lot of people at the minute in our customer teams who are doing 55 to 60 hour weeks and ... the way things are that experience could be close to walking out the doors and [we] could lose that overarching capability because people are over stretched at the moment, and I think that would give us real problems if a load of our key capability walks out of [the] doors just at the time where is the XWB customers are going to grow exponentially resulting in more loads to manage...

(Interviewee E30)

Beech and Huxham (2003) underline the fact that in periods of organisational change management often face underlying paradoxical tensions of performing: often because of role conflict. During the analysis of the participants apercu there was clearly a confliction felt by some management within the services arena between delivering the organisation's goal and objectives and their moral responsibilities towards their staff's welfare. This paradox, although not universally felt by all participants, was most prevalent in areas of the business requiring personnel to advocate on behalf of the customer, understand the customers business and build relationships with customers (Baines and Lightfoot, 2013). In a business reliant on such resources to deliver competitive advantage and sustainable revenue such a tension was clearly a concern for their managers, who like Gutek (1995) and Pistoni and Songini (2017), acknowledged it is those staffs interacting with the customers that have

the ability to build or break client relationships; therefore for the long-term interest of the business the organisation needs to be able to balance both organisational AND individual needs.

5.22.3 Stakeholders paradoxical tension: Autonomy - Control

Where a performing tension exists between stakeholders, questions arise in terms of what form of control is justified. From the literature review many scholars contest that as a firm's transitions from a product-centric business model to one delivering advanced product-services there arises a greater involvement in the numbers of stakeholders, as progression to a more advance product-service model tends to require greater levels of collaboration and co-creation via stakeholder engagements and relationships (Baines and Lightfoot, 2013; Raddats, Burton and Ashman, 2015).

However, utilising greater stakeholder collaboration or co-creation is not without challenges. The notion that innovation and change involves greater stakeholder engagement and management implies with it a corresponding set of intricate tensions, competing demands, conflicts and contradictions, all of which are well established in organisational literature (Smith *et al.*, 2017) and often require an integrative approach to their management.

Moreover, due to an asymmetry in skills if two firms do collaborate to co-produce an innovation, for example to support an advance service offering, there exists the possibility of power play politics (Zolkiewski, Burton and Stratoudaki, 2008). Though one should not assume in such a situation that a larger firm necessarily holds the power in such a relationship, this would be to misunderstand the nature of innovative resources and skills.

Such an example of such asymmetry affecting the organisation became apparent through a surprising comment on innovation from one interviewee who directly questioned the researcher claim of the case study organisation being an innovation company:

'What! Us Oh No! We use university technology centres more for any innovation, we use them to drive Blue sky thinking because we stifle innovation in the company, and we recognise that....'

(Interviewee E8)

The exploration behind the comment led to the identification of a Learning/Performing Tension of 'autonomy verses control'. This paradoxical tension was something the organisation appeared to struggle with when utilising external sources for innovation, as well as the consequences of failing to manage the asymmetric nature of knowledge in such co-operative dealings. The following dialogic captures vividly the point:

'...when I was in M&A, I bought a company ... which dealt with ceramics composite's which we needed as key for the business, it was a small company, we paid about £20- £25 million or whatever it was for, it had about 14 employees but the intellectual property was in the heads of the three guys who owned it, effectively who ran it ... We put a caveat on that the company would not be moved from where it was, because these people were not company people, we had to let the company operate as a small company because if we took it into the 'mothership', or whatever you want to call, we would stifle it with systems, with processes, with reports, which just meant they wouldn't be entrepreneurial and wouldn't be able to carry on and developing technology and do what they do. So instead, we had to send people to work with them to try and extract some of that knowledge from then to take that to a bigger facility that we would develop new and we would build, a preproduction facility, because taking those people out and putting them into our environment would just mean that they would not be able to survive in the bureaucracy that we have. So, we knew that upfront, if we brought them in, if we tried to align them with our systems or did anything to try and integrate them that we would kill any innovation that was part of that, so we didn't. We knew that for a fact that there was no way we could bring them into the company.

Well, we've taken our own people who were really good, and put them into an arena that is entrepreneurial to try and learn...So, that was the plan. So, we bought the company, can only have bought it about four years ago probably now, so we have gone past the first three years and the preproduction facility is being built at the minute with £100 million pounds investment.... And I think....err... what we found is that we didn't do the activity fast enough in terms of trying to take the knowledge out of the people who were in there. So, we left the entrepreneurs on their own too long, which meant their interest in business, knowing they had the cash in the bank started to wane.... I don't think we put people in quick enough to get the knowledge out of those people and back into the business...it wasn't very quick, we didn't do it as well as we should have.... and the owners of the business, who already have got the money and are multi-millionaires now....umm ... their incentive to try and work with us as it got to the period they were tied into for, as it got to the three years, and we have reached the end of that now, two of them no longer work there and the other one is there but is not really interested and if we upset him then he simply says I'm not coming in tomorrow because he doesn't need to...and the whole thing fails!

(Interviewee E8)

The above dialogic demonstrates that asymmetry in knowledge can present challenges for firms wishing to outsource innovation, and that despite the case study organisation acknowledging the need to allow the small firm autonomy from the 'stifling' processes and culture of the organisation, the innovation knowledge held by the firm's founders enabled them to exert considerable control and power over the appropriation of their knowledge, the financial restitution for transfer of their knowledge, and ultimately their interest in cooperating and co-producing once such goals had been met.

The behaviours demonstrated by both parties would seem to suggest that the tension associated with differing goals and strategies between firms creating innovation and firms purchasing the knowledge are paradoxical in nature, with not only tensions between autonomy and control but also within that paradox conflicting degrees of risk acceptance which can both mitigate or support behaviours of both parties: either beneficially or negatively to the long-term goal of the innovation purchaser.

5.22.4 Stakeholders paradoxical tension: Financial – Social obligations

The paradox of financial – social responsibility is a well acknowledged strategic paradox that business face (Smith and Lewis, 2011; Smith, 2014), but in terms of this case study such a duality is interconnected and interrelated not just under the theme of Performing but also that of Belonging/Performing (See section: Paradox of conformity) as well as the previous discussed Paradox of Management: support for organisation goals verses support for employees (Section 5.30.2).

At a strategic level the interrelated tensions across the performance theme tend to be concerned with the need to manage the diversity of stakeholder demands, which are often in conflict and can arguably shape the way an organisation goes about its business (Smith and Lewis, 2011). In this study the organisation's drive for growth and profitability reached a point when arguably profit was put before social responsibility, resulting the organisation being investigated by the SFO for fraud. Whilst this was clearly a serious breach of business ethics, it was defended by some as not uncommon behaviour at the time of the offence either in the organisation or across the sector:

'Staff have seen some people being pushed out for behaviours that I understand are unacceptable today, but which were common practice at the time, and weren't doing anything necessarily wrong I don't think, but there has to be a public perception of what is happening...umm... and that's changed how people work as well, changed how they behave because of that.'

(Interviewee E8)

'I mean the SFO investigation for instance. I get it, I completely get it, but I think if the SFO looked at any of our competitors they would be in the same position they just haven't got caught yet! Because from what I remember from 15-20 years ago it was normal behaviour, nobody I worked with who has since been pushed out of the door, of which there has been a lot, nobody felt they were doing anything wrong it was normal behaviour, nobody was actually thinking I shouldn't be doing this, or doing that, that was how we did things! ...I get it that at the end of the day it's not how we should do things; however, if you went back 15-20 years ago and that was how things were done...it was the norm!'

(Interview E14)

The drive to deliver business performance and financial returns to shareholders and investors can influence behaviours if senior management are not responsive to the challenge. During this case study investigation there was a lot of soul searching expressed by many participants as to the reason behind the behaviours that caused the SFO investigation and how processes were now in place to mitigate the situation ever happening again. However, one cannot but wonder whether the drive for growth created a climate of 'win at all costs', in which the dichotomous autonomy and control tension was too heavily biased towards giving people too much autonomy at the expense of appropriate governance measures. The role of governance is central to the function of an organisation's board and SLT, where the balance between financial AND social obligations requires clear leadership and communications to ensure such erroneous activities are given no opportunity to manifest themselves again and is interrelated to the next tension: collaboration and control.

5.22.5 Stakeholders paradoxical tension: Collaboration - Control

Scholars such as Sundaramurthy and Lewis (2003) highlight the persistent debate between proponents of control versus collaborative approaches to governance; whether detached outsiders or knowledgeable insiders should dominate boards and whether directors should control or empower executives. The phrase 'Outsider' and 'insider' has been identified as referring to explicit social

identities (Simmel, 1920) and the flowing communication interactions resulting in shifting power relations (Naples, 1996). Sundaramurthy and Lewis, 2003 proffer a conceptual argument for a collaboration versus control tension utilising agency theory and stewardship theory approaches to governance.

This collaborative versus control tension is said to evolve from two conflicting needs: Agency – principle. Agency theory advises a control approach to curbing any self-serving behaviours of managers (agents) which could impact the owners' (principals) wealth (Eisenhardt, 1989), whereas stewardship theory details a collaborative approach as a means of *'tapping individuals' aspirations via cooperation and empowerment'* (ibid, 1989, p. 407). Smith and Lewis (2011) position this tension as an exemplar of an organising paradox, involving competing designs and processes yet seeking equifinality; however, in this framework the tension is repositioned as a performing tension because of perceived stakeholder influence on board activities.

To some of the participants this tension was present in the organisation in what they saw as 'outsiders' verses 'insiders' paradox (as discussed in see section 5.21.4), where external leaders with perceived little or no understanding of the business were being brought into the organisation and instead of collaborating with one another were presented as having competing agendas:

'My personal view is that all these external people that we have had at the very senior levels, and on the board, all have got different views and different insights and they are all coming in to try and break the culture that dominant logic ...'

(Interviewee E15)

'I think we have seen that with some of the external appointments of people that have got no [name of case study organisation] history or engineering background whatsoever appointed right at the top of the organisation ...'

(Interviewee E20)

'We have had a long period of continuity in the executive team. Well, now it's all new guys! You know, the top team has very few [name of case study organisation] people that have been here any length of time. The top few roles, there is nothing, you know, they haven't even got two years' worth of experience between them, so what is going to happen is that they will want to

go and make their changes and it will be binary! It will either happen, and we will all fall in love with their way of working or the machine will fight against it, and they will go!

(Interviewee E23)

Whilst control and collaboration tensions expose a variety of interwoven behaviours, there is nevertheless a paradoxical argument for supporting a collaborative approach between 'outsiders' AND 'insiders' as the rising environment ambiguity and turbulence being experienced by the case study organisation demands a more paradoxical approach to governance, one that embraces both control AND collaboration

Such an approach would enable the SLT to be presented as an aligned and cooperative management team capable of working together to the benefit of both external and internal stakeholders. However, paradoxical tensions often stem from perceptions of opposing elements and to some of those interviewed the introduction of outsiders onto the SLT was seen as the catalyst for tension between collaboration and control.

Moreover, it is logical that concerns over how individuals perceive the senior management have become more salient due to the transformational changes as well as the external challenges (discussed at section 3.5.1) that affected the organisation throughout the data gathering stages of this study. Consequently, many of the comments regarding the SLT response to the organisational challenges being faced could be described in terms of the competing frames of 'control-collaboration'. However, the behaviours being attributed to the SLT were now giving rise to a sense of scepticism to some in how the organisation was being run and where it was going:

'But there are loads of different people with competing agendas at the moment and there is so much change going on because everybody wants something slightly different, and those at the top all vying to try and make their own mark which means were all doing slightly different things and are not operating as a cohesive unit at the top...'

(Interviewee E14)

If you were to go to our senior staff and say clearly articulate and draw out for me your vision of how this thing evolves over the next couple of years, most of them actually couldn't do it

because they don't really know! The feeling one gets is that we are somewhat making this up as we go, figuring out along the way, they are not operating as a well-oiled team!'

(Interviewee E17)

Traditionally, strategy scholars have strongly recommended that there should be more outsiders than insiders on a SLT, arguing that the objectivity that outsiders' bring is necessary to address the self-interests that can conflict insiders judgements. Additionally, scholars such as Sundaramurthy and Lewis's (2003) posit organisations seeking a more dominant control approach often prefer an 'outsider-dominated' leadership team than one comprising 'internal' participants although paradoxically outsiders' lack of firm-specific knowledge can often be problematic. Within the case study analysis ambivalence towards the SLT may be the consequence of staffs interpretation of such a dichotomy.

This view of 'outsider' control and their perceived lack of industry knowledge was a theme that many participants raised, questioning the competence of such outsiders to lead an organisation renowned for its engineering history and excellence. This attack on 'outsiders' competency could be seen as concern over the impact such failings could have on the firm's reputation. Organisational reputation meant a lot to many of the interviewees who often spoke of their pride in working for the case study organisation, with some having their self-identity deeply rooted in the organisation's external image.

Moreover, despite scholars promoting collaborative practices with stakeholders as necessary if firms want to build a synergistic work environment wherein the multiple parties can work together towards a common organisational purpose (VanVactor, 2012); however, a few interviewees contested that this was in fact what was happening. These concerns were now translating into cynicism, with some openly expressing a view that many of the stakeholders appeared to have their own agenda for the business, and rather than presenting a collaborative environment many cognitively ascribed their behaviours as desire for more control over the direction and management of the business. Thus, the recursive collaboration-control tension at the stakeholder level could be viewed as a tension between the perceived divergent goals and objectives of 'outsiders' challenging 'insiders' normative beliefs of acceptable stakeholder collaborative behaviours and leadership.

5.22.6 Paradox of measuring performance: NPI reporting – aftermarket reporting

When measuring performance three key questions need to be answered: 'when do we measure performance?' (What time horizon), 'what do we measure?' (What objects and which performance areas) and 'how do we measure performance?' (What kind of KPIs should be used). In terms of 'when to measure', long-term and short-term strategic horizons should be considered, dealing with 'what to measure' requires the identification of what objects and areas of activity to be assessed, and finally 'how do we measure performance' necessitates the identification of the type of indicators to be used (both financial and not financial ones).

In this research the next recursive challenge explored is that of monitoring performance in both NPI and aftermarket activities. In terms of time horizons there was no specific instances of this question being raised as a concern. However, as identified in section 5.10.1 when discussing 'what do we measure' the literature advises that there are two options. The first relates to product-centric manufacturers. These tend to focus on cost, quality and delivery performance metrics (Baines and Lightfoot, 2013), whereas product-service manufacturers focus their attention on a product's performance, availability, and reliability (Baines and Lightfoot, 2014); in short on a product (or assets) utilisation rather than its delivery or sale.

As servitization relates to an integrated product-service offering firms undergoing such a strategy require the juxtaposition of these competing performance measures. From a paradox perspective the challenges relating to effective performance measurement can be captured under the thematic heading of 'Performing'. In 'performing' the duality seen at play in terms of performance reporting can be represented as that of balancing the often-divergent demands of external and internal stakeholders and their contending views of what constitutes organisational performance and success (Donaldson & Preston, 1995; Smith and Lewis, 2011). Balancing such multiplicities can often lead to contradictory interpretations and actions, as leaders seeking to address the competing goals associated with performance tensions can too easily become mired in intractable conflict between different functional areas within the organisation (Smith et al., 2012).

In this study the conflict between functional areas in terms of performance reporting was apparent in the myriad of apercu dialogic statements captured in section 5.10.1. The tension highlighted in that section can be interpreted as extant performance measures in the organisation appearing not to capture the interrelated and interconnected elements that embrace both production and services activities; but rather retaining a bias towards traditional product delivery measures, failing to capture the vagaries of service performance.

As such the paradoxical tension experienced in the challenge of performance reporting is one of managing the conflicting elements of traditional product-based reporting and service measurement that captures the heterogeneity and flexibility of Service activities, and can be partially explained by the organisation's structural stovepipe (vertical) chains of command, which appear to support functional activities rather than any that captures the cross functional and holistic nature of many of the activities (Horizontal).

5.22.7 Paradox of Scaling: Capacities for the future - capabilities for the present

Across the literature there is a general census that for a manufacturer's successful implantation and sustainment of a servitization strategy a key criterion is the firm's capability of developing economies of scale (see, Akan, Ata and Lariviere, 2011). Economies of scale are said to arise in servitization by manufacturing firms being able to provide services to their entire installed base and thus offering a cost efficient service delivery (Pistoni and Songini, 2017).

One of the most effective capabilities that the case study organisation has at its disposal to achieve economies of scale lies with its dispersed service infrastructure sites (CSCs) situated close to major customers. The goal of the CSCs is to deliver enhanced engineering capabilities, co-ordinate operational planning, deliver innovative data services, provide support to the manufacturer's sales campaigns and be the lead on customer account management. The researcher sees the relationship between products and services from a CSCs perspective as one of a symbiotic relationship in which the aeroengine product represents the base for services, and consequently a direct source of service potential and thanks to the service offering associated with the product, the relationship developed

with customers enhances the possibility of the organisation selling further related products. CSCs activities therefore represent a growth opportunity for company revenues, but only if they are scaled appropriately.

However, as Shankar, Berry and Dotzel (2009) note a key stumbling block for many organisations has been their failure to effectively scale up to meet customer demands, and from the various dialogues at section 5.9.2 issues of scalability within the organisation were present and not just confined to CSCs but also referred to activities concerning joint venture requirements to deliver global MRO activities, and operations at the 'mothership' (Derby site); moreover, questions of scalability were not just infrastructure specific:

'Yeah, so scale is one: and that can be scale in production, it can be scale in costs, it can be scale in people management, it can be scale in systems, do our systems actually allow us to scale something properly?'

(Interviewee E8)

Thus, the question of appropriate scaling was deemed critical in many participants' minds to the organisation's successful delivery of PSS solutions, both today and the future. Yet, despite this acknowledgement, concern was expressed that the scaling challenges highlighted in section 5.9.2 were the result of the company's failings in its temporal focus and depth decisions between the needs of today (managing installed base customer requirements) with the needs of tomorrow (i.e., managing requirement for growth).

The scaling challenges of 'Today' related to management decisions concerning resource availability and processes. In this study, examples of resource planning failures cited by some participants concerned the initial lack of engine test-bed capacity, which was necessary to meet the increase in NPI delivery; the availability of engineering resources to meet demand changes in a time of large-scale redundancies; and how the simplification of internal processes, through Lean activities for example, were to be achieved.

The scaling challenges of 'Tomorrow' is reflected in participants views on whether the organisation had thought through the various concatenation requirements necessary to deliver an increased capacity in

aftermarket capabilities to meet a burgeoning customer base, how it was going to reduce cost lines in future products and activities so as to be more profitable, together with how long-term scaling of appropriately local skilled staff in some of the more challenging CSCs environments would be achieved where access to appropriate expertise and skills could be problematic.

Consequently, the paradox of scaling identified in the case study organisation is one of managing paradoxical capabilities: capabilities for today while planning capabilities for tomorrow.

5.23 Belonging Tensions

In this section, the discussion on the recursive challenges identified within the intra-organisational structural theme of Belonging and the interrelated tensions sustaining them (Figure 5-9 refers) is explored.

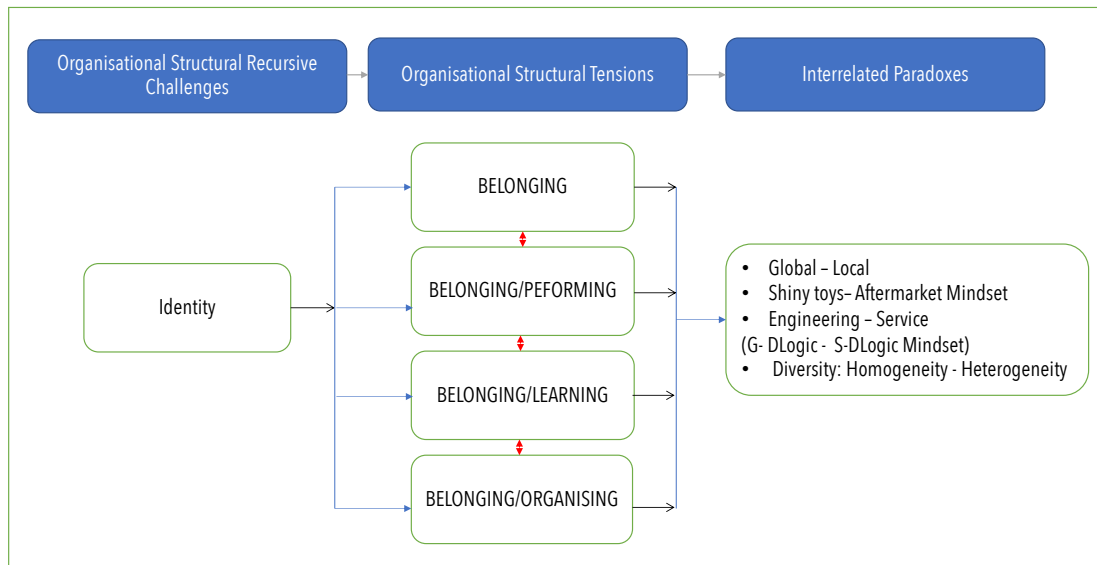


Figure 5-9. Interconnected paradoxes within Belonging challenges

Tensions experienced under the thematic node of Belonging can generally be said to refer to questions of identity and relationships (Lewis, 2000) as individuals and groups pursue the simultaneously dichotomous challenge of seeking homogeneity and heterogeneity.

Throughout this study the researcher had been cognisant of an underlying dichotomy frequently intimated at, both explicitly and implicitly, during participants' discourse. This dichotomic tension appeared to reside between those involved in development and production of products, and those involved service activities (See section 5.8). Throughout much of the servitization literature a key challenge to be overcome for firms' transitioning to integrated solutions concerned changing employees mindsets (for examples see: Johnstone, Dainty and Wilkinson, 2008; Neely, 2008; Vargo and Lusch, 2008b; Baines et al., 2013b; Alkhoraif and McLaughlin, 2016; Story *et al.*, 2017; Kohtamäki, Einola and Rabetino, 2020).

As an established provider of complex integrated solutions, the ideation of the case study organisation is one of creating a customer-focussed mindset across the business without losing its traditional engineering mindset. Whilst scholars such as Oliva and Kallenberg (2003) and Martinez et al (2010) acknowledge that such a desire is not new, it can nevertheless present problems in terms of individual's understanding 'who we are' and 'who are we becoming' in relation to organisational identity.

People form their beliefs often based on their personal experiences and as such their examination can be instrumental in the context of displayed behaviours (Dweck and Yeager, 2019). Within the case study the divergent views on 'who we are' mirrored the multiplicity of identities within the case study organisation, although it is fair to say that once again, the role and location of the interviewee seemed to significantly affect opinions, the same caveat could be said to hold for the responses to the question on 'who are we becoming'.

It has long been surmised that individuals possess multiple identities (Pratt and Foreman, 2000) and the same can be said for organisations (Albert and Whetten, 1985; Brown, 2019; King, Felin and Whetten, 2010; Lucke and Golden-Biddle, 1997), the challenge for management therefore is to manage these multiple identities (Pratt and Foreman, 2000). Although organisational identity has generated a small interest with organisational scholars, in other research domains such as psychology and sociology the concept of multiple identities within individuals and organisations is more advanced (Miszenko and Day, 2016).

Social Identity theory (Hogg, Terry and White, 1995), for example, posits that an individual can have multiple identities depending on the number of groups to which one has membership. Moreover, a person's identity is also composed partially by the role one occupies at work and how such a role is self-identified in relation to others which can also result in multiple work or role identities (Sluss and Ashforth, 2007). Consequently, these multiple identities have the potential to conflict with one another.

Albert and Whetten (1985) however, also acknowledge that organisational identities do not have to be collectively agreed by all employees, and in their work distinguished between two forms of organisational multiple identity: ideographic and holographic. Ideographic multiplicity is said to abound when identities are held by specific sub-groups but not the whole organisation, in contrast with holographic multiplicity which is shared identity across the whole of the organisation (Corley et al., 2006).

In relation to this research findings, the organisational identity of the case study organisation could be described as ideographic in nature and supported by a conjunctural causality of mindsets, all interrelated and interdependent and better reflect the intangible attributes embedded in the simple term 'mindset'. Accordingly, this research identifies four such dichotomous mindsets and inherent tensions: global/local mindset. 'shiny toys/aftermarket mindset, Engineering/Services (G-DLogic/S-DLogic) and homogeneity/heterogeneity mindset (Diversity). Each of these tensions are now reviewed below.

5.23.1 Mindset tension: Global-local

Studies have shown that organisations seeking market opportunities, as well as access to critical resources, are exploring not just the home market but increasingly operating in distant and often little-understood regions of the world as well. However, *'how successful a company is at exploiting emerging opportunities and tackling their accompanying challenges depends crucially on how intelligent it is at observing and interpreting the dynamic world in which it operates'* (Gupta and Govindarajan, 2002, p. 116). Consequently, how organisations and its management perceive and interpret the global environment in which they operate in will impact not only on business strategies pursued but ultimately their success (ibid, 2002).

In terms of interpretation, every individual has a mindset which is shaped by who they communicate with, the emphasis on language used, and their discourses over time, all of which coalesce to shape their perspectives on the world. A mindset therefore can be understood as the beliefs individuals have about the nature of human characteristics (Dweck and Leggett, 1988) which help explain how

they make sense of their world (Priester and Petty, 2016). However, as organisations can be said to be microcosms of society, multiple discourses propagate and thus tensions can arise as individuals struggle with contending interpretations or mindsets.

In the context of this research, the first mindset tension observed, global-local, became salient during comments made about the organisation being Derby centric (see section 5.5.2.2) resulting in what some saw as its Derby-centric practices being divested onto the organisation's CSCs and non-UK facilities regardless of operating environment, as captured in the following dialogues:

'Now, I will tell you we have a history of... umm.... the Derby postcode is the right way to do things and therefore we just replicate that around other sites! ... that attitude still pervades today!'

(Interviewee D22)

'I understand their frustration and I think there are tensions between Derby and certain customer service centres...sometimes Derby's imposition of processes and culture rubs people the wrong way!'

(Interviewee E18)

However, the question of a 'Derby' mindset dominating actors and the organisation's actions was not accepted by all, with some arguing that the organisation surely couldn't function as a global player if it just maintained a locally centric mindset, although in fairness their argument had a certain circular logic to it concluding the organisation couldn't be Derby centric as it had set up four overseas CSCs (see comments in section 5.3.1). Nevertheless, one could argue that the drive for standardising Derby's processes and exporting them as the exemplar to follow at the CSCs and other external collaborators could be construed as Derby leadership enforcing its mindset of the world, as the following comment from a senior Director demonstrates:

'So, I'm less concerned with the geographic cultural side of things, more concerned with the culture of compliance in these locations'

(Interviewee B3)

However, the processes of dealing with aftercare services are characteristically reactive in nature and have a far greater touchpoint with customers than traditional product development, surely meaning a

need for a more global mindset that imbues flexibility rather than rigid compliance to Derby processes if CSCs are to be able to respond quickly to customer needs.

Perhaps the most telling comment in terms of an overall appreciation of the mindset enculturated within the business came from someone directly responsible for transforming the organisation's culture, and by default arguable the mindset within the Derby 'mothership':

'I think a lot of it is still a sort of small, UK based business mindset... the Derby mothership still controls everything (laughter)...'

(Interviewee E26)

From analysis of participants' discourses, the global-local tension can be characterised as being the consequence of an interrelated notion of command-and-control verses flexibility and autonomy. And despite the organisation's ventures abroad with its globally located CSCs and MRO facilities, there remained a palpable tension between global and local focus on mindsets within the business.

The mechanisms that support this view is the observation that most of the participants saw the global-local mindset in terms of 'either-or' binary thinking. Such thinking fails to grasp the reality that heterogeneity across cultures and business is a pervasive feature of firms seeking a global presence, and that ignoring it can be a costly mistake for any company trying to build and successfully exploit a closer footprint to customers by engagement across borders (Gupta and Govindarajan, 2002). However, this does not mean that organisations need to become entrenched in either a local or global mindset, what adapting a paradox perspective allows is the removal of such binary choices, enabling management and organisations to embrace a 'both/and' approaches, enabling the organisation to balance the best of both logics.

5.23.2 Mindset tension: 'Shiny toys' - 'Aftermarket'

Following on from the discovery of a global-local mindset tension the next confliction from the data related to an internal tension relating to the perceived mindset abstraction of 'shiny toys verses aftermarket'.

The phrase 'shiny toys' was a jocular term expressed by many in reference to engineers, specifically those involved in design, development and manufacturing of aeroengines, with 'aftermarket' referring to those within MRO and after-sales service functions. This divergence of identity between engineers from their collective professional identity suggests a conflict between corporate logic, with its legitimacy based on a clear division of activities and association of technical proficiency and prestige to product brand identity.

This division was so pronounced during the interviews that the researcher thought at one stage the organisational structure could be rewritten as a simple dichotomy between: a traditional product-centric manufacturing firm and a services firm such was the clear division in many interviewees' minds, describing the organisation as a double-headed beast (see section 5.12.1, interviewee A5) or as below, a company of two halves:

'So, I think {[name of case study organisation]} is a company of two half's... on one side resides 'shiny toys', on the other 'aftermarket' and so begins the issues...'

(Interviewee B27)

Such a dichotomy was not unexpected as the organisation is a bifurcation of product design and manufacturing together with a services strategy, the quintessential elements of servitization that require integrating to deliver the complex integrated PSS solutions available under the organisation's TotalCare offerings. However, whilst much of the literature concerning servitization promotes the integration of the two divergent elements time is no guarantee of success, for despite over 30 years of delivering a servitization strategy the divergent mindset between those engaged in traditional manufacturing activities and those delivering a service strategy remain polarised.

Indeed, talking to some engineers working within the service elements of the business, the draw of the NPI or 'shiny toys' arena seems irresistible for many of them, despite acknowledging that working in services had provided them with a more holistic understanding of the interrelated activities that go into making up servitization offering, as well as a greater understanding of where the company's revenue is generated. The pull of 'shiny toys' was ever present, with the following informant's comment capturing the feelings of many:

'Prior to coming to the [name of aeroengine] two years ago I had spent about seven years in NPI, which is that shiny, sexy, bringing new stuff to market and that just sucks resources, it is all about growth it is about driving it as hard as you can, but it is massively rewarding when they type gets its certificate, starts flying and enters into-service it is massively rewarding. Then I came across to fleet programs, which is where I am now, and it is hugely different! ... The pace and the buzz are slightly lower than on an NPI programme...the people are a bit of a ...how can I put this...a different demographic... So, I think ultimately my aspiration is to go back to NPI, because that is where I got the biggest buzz delivering an engine program and getting them into service; no one is going to top that!'

(Interviewee E15)

What was most interesting from these discussions was how clear participants saw the internal demarcation of activities. Whilst there was undoubtedly internal awareness of the importance of the 'aftermarket' services to the business financially:

'Well, clearly we engineer products that are really at forefront of the aerospace industry, but we also execute services, and actually as we march forward in time our revenue and profit from services will become a bigger part of the business. So being able to service our products and provide a portfolio of services that customers want, at good pricing, and that we can execute, will become more important...'

(Interviewee A1)

'I think we have an obsession in the organisation of being able to measure and plan to build of new engines, but that is only actually a part of our business and the thing that is going to pay all our pensions, and everything is 'How successful we are in the aftermarket and the service offering we have got and how we protect that'. So, I see the bigger value and business around the services but that is probably because of my experience...'

(Interviewee E19)

However, the following comment whilst acknowledging a palpable tension between 'shiny toys' and 'aftermarket' exists saw such a duality as natural due to the nature of the business, and that if managed appropriately such a tension could have beneficial aspects to the business:

'Yeah, I do see a tension between 'shiny toys' and 'aftermarket', and for me there should be! So, in my role, effectively I am accountable for all the service offerings that come, so yeah, I have to push in to engineering to ensure that they are making sure that the products are mature. If they don't make sure the products are mature my cost line goes up through the roof! So, in the end there is a very healthy tension there, it might be managing safety issues, and various things which are important to them [shiny toys], which is true, but we also need to focus on life cycle cost issues and the need to drive that down or reduce customer disruption

[aftermarket issues] that may not be very important to the engineering product guys but are certainly important to the business.'

(Interviewee E18)

Overall, from the data analysis there appeared a definite cognitive conflict (Lewis, 2000) over the normative description behind such terms, with where an informant worked and role he/she occupied a significant contributing factor to the mindset displayed. For example, abstraction from participants' comments showed that those personnel operating in the 'aftermarket' arena often felt that they were the 'Cinderella' component of the business, though seen as beneficial to the business in the long-term they felt overlooked in relation to the priority and importance that 'shiny toys' garnered in terms of promotion marketing, resource allocation, and funding.

Moreover, the researcher found the language used by many of the participants throughout the interviews offered an interesting lens into their mindsets. Wittgenstein (1953) in his seminal work proposed the idea that the meaning of words is ultimately bound up with social practice, in how individual's use language in their everyday contexts. He contended that words are meaningful in certain contexts that are mutually understood by respective participants, using the term 'language games' as an analogy to refer to these different social contexts. From an interpretivist viewpoint language and context are seen as essential components in the way individuals and groups represent experiences to others, and that the meta-narrative behind phrases such as 'shiny toys' or 'aftermarket' are concepts or 'signs' Saussure (1974) in which the words have contextual power by the community using them.

Accordingly, the terms 'shiny toys' and 'aftermarket' have their discourse power in the general conceptual framework in which such terms are embedded and interpreted, and such language games contribute to a 'hidden identity' only identifiable through discourse. In this study the researcher contends that the terms 'shiny toys' and 'aftermarket' support the belief of a tension between two divergent mindsets. Moreover, the continued use of terms such as 'aftermarket' reinforces this tension by embedding it in acceptable organisational language giving rise to an asymmetrical

disparity and distributed awareness perhaps of 'aftermarket' being merely a supportive role to the primacy of manufacturing and sale of the product (Kindström and Kowalkowski, 2014).

5.23.3 Mindset tension: Engineering firm-Service firm (G-DLogic-S-DLogic)

The next tension is a well-documented one that firms undergoing a servitization transformation need to address (see, Vargo and Lusch, 2004; Lusch and Vargo, 2008; Baines et al., 2009; Ng *et al.*, 2012). In 2004, Vargo and Lusch proffered S-DLogic as a fresh lens in which to view value as opposed to the traditional product-goods dominant view of the World (Vargo, 2011). S-DLogic pursues value as a customer realised outcome as opposed to the traditional product centric view of seeing value only in exchange of the product for a fixed price (Vargo and Lusch, 2004).

Unlike previous studies that have sought to define and visualise the differences in offerings from a S-DLogic perspective, for example, Ng *et al* (2012), the findings from this research focuses on how after over 30 years of delivering successful servitization offerings participants would describe the distinct, central and enduring characteristics of the company (Albert and Whetten, 1985), and whether or not the much critiqued need to adjust mindsets for servitization firms had eradicated the tension between traditional manufacturing logic and that of a service inspired logic.

Ex ante the researcher held a naive assumption that of all the challenges facing the case study organisation this was one that would have been resolved a long-time ago, in part due to the publicised success of the organisation in its servitization endeavours. Yet, interestingly, when asked to describe the organisation in simple terms to the researcher many participants' chose to bifurcate the organisation into engineering or services, showing that the question of organisational identity, particularly internally, still retained a strong recursive G-DLogic vs S-DLogic element to it.

Once again opinions diverged on experience and role occupied. However, despite the organisation's undoubted success in servitization, the question of '*who we are*' still could be reduced to the confliction between G-DLogic and S-DLogic values and thus signalled to some the predominant identity of the organisational, as the following dialogic examples attest:

'Umm... and so I think you've got certain parts of the organisation very high on customer awareness and customer culture, and you've got unfortunately really very low, or way lower than it should be in other parts! ... but overall ... Umm... I would have to say it is an engineering company! with a heavy heart, I would have to say it is an engineering company!'

(Interviewee B27)

'Oh, a very high percentage of our thinking is driven by the engineering mindset! ... too many here still see [name of case study organisation] as an engineering company first and foremost!'

(Interviewee B9)

Moreover, throughout the servitization literature scholars acknowledge that embedding a service culture in manufacturers is not an overnight task but rather one requiring a long-term orientation (Rabetino et al., 2015). However, such a temporal focus can result in temporal long-term vs short-term tensions due to the fact that a long-term orientation rarely matches the short-term needs of a business's financial goals (Kindström and Kowalkowski, 2014). For an organisation famed for its successful transformation to a servitized firm and its extolling of the value services bring to the organisation, it was a surprise to find that there remained a strong G-DLogic view of business, particularly by personnel within the manufacturing side, who still saw the 'service infusion' component of servitization (Kowalkowski et al., 2012; Ostrom et al., 2010) still as something that delivered benefit in the future, rather than delivering value in the present:

'We have partly had to become a service company, whether we like it or not! Some enjoy being a service company, engineering probably not that bothered, production we couldn't give a shit! But we have quite a large customer organisation now and we can see services as an area for future expansion in revenue and reach!'

(Interviewee B27)

Despite the servitization literature being replete with scholars extolling the need for organisational redesign to support the delivery of a servitization strategy (see for example, Baines et al., 2009b; Galbraith, 2002; Gebauer et al., 2010c; Gebauer and Kowalkowski, 2012; Oliva, Gebauer and Brann, 2012; Zhang and Banerji, 2017) requiring the integration of disparate functions and thus the embedding of a more S-DLogic across the business; throughout the interviews there was often a strong divergence of opinion as to how successful the organisation had been in such coupling, as

could be seen in comments, for instance, relating to alignment (section 5.8.2), language (Sections 5.10.1; 5.18.1 and 5.31.1-5031-2), and values (section 6.5).

However, in fairness, a few senior managers acknowledged that the delivery of an integrated product-services offering to customers was not an 'either/or' choice but one that recognised customer-value lay in delivering excellence across both activities; in essence adopting a paradox "AND/BOTH" approach recognising that without an engineering product one couldn't design the complementary service offerings necessary to provide the differentiator within a competitive aeroengine marketplace:

Umm... I really don't know quite how to answer that! Interestingly I don't think anyone of them is dominant anymore because I think if you look at the revenue split it is broadly 50/50.'

(Interviewee B7)

'... the description of "we are an engineering company" or a "services company" that is a bit old hat now... you know we have spent many intellectual hours on it, but in the end, it actually doesn't move you any further forward... we are both, live with it!'

(Interviewee A10)

Overall, despite the literature acknowledging a tight collaboration between engineering and services is key to sustained competitiveness (Salonen, 2011; Ayala et al., 2017; Batista et al., 2017; Kohtamäki, Einola and Rabetino, 2020), and notwithstanding the latter dialogic statements, the findings in this study highlight there remains within the organisation a strong divergent positionality in terms of '*who we are*', which in this analysis presents itself as a recurring duality of engineering (G-DLogic) and services (S-DLogic) mindsets.

Paradox theory provides a vital insight on this issue. Rather than a dichotomous 'either/or' approach to mindsets, paradoxical thinking acknowledges what some participants commented on in their interviews, and captured in general by Interviewees B7 and A10 above; namely, that the '*shift from manufacturing goods to integrated solutions*' (Zhang and Banerji, 2017, p.217) necessitates the need for leadership to manage within the business simultaneously **both** engineering mindsets **and** customer-orientated service mindsets; acknowledging the merits of both.

In conclusion, one can argue that in terms of organisational identity questions of '*who are we*' and '*who are we becoming*' present by the very nature of the divergent functions necessary to design, develop, and deliver the various TotalCare offerings both complex and paradoxical questions over identify (Gioia and Patvardhan, 2012); thus, requiring management to engage not in "EITHER/OR" action but rather to acknowledge that both elements exist simultaneously and despite various organisational transformations remain persistent. Therefore, if effective and efficient intra-organisational integration is to be achieved within the organisation there is a need for management to learn to balance both G-DLogic and S-DLogic mindsets.

5.23.4 Homogeneity - Heterogeneity tension (Diversity)

The final tension in this section on mindsets relates to diversity and is categorised as the tension between homogeneity – heterogeneity. From literature there is ample evidence that people consciously and subconsciously classify themselves and others into groups (Tsui, Egan and O'Reilly, 1991) based on primary characteristics such as *gender, age, ethnicity, and race* and secondary characteristics including *education, religion, geographical origin, income, marital status and profession* (Rahim, Oluwafemi and Afolabi, 2017, p. 413).

However, notwithstanding its long history, diversity lacks a universally accepted definition, and is comprehended to change in scope and priorities depending on *industry practices, regional setting, or business requirements* (ibid, 2017, p. 414). However, Esty, Griffin and Hirsch's (1995) summation cited in Rahim, Oluwafemi and Afolabi, (2017, p. 414) as '*admitting, understanding, respecting, and celebrating dissimilarities among people with respect to age, personality, traditions, gender, physical and mental ability, sexual orientation, religion belief and practices among others*' is generally accepted as a satisfactory definition.

In section 5.5.2.3 of this thesis the challenge of diversity was identified under the Belonging challenge and primarily identified with the fact that in moving closer to its customers had required the organisation to set up global CSCs and strategic alliances to support delivery of its various PSS offerings. Such actions were seen from a Belonging challenge in terms of leading and managing

diverse work teams. The primary concern here was that these new work teams would not necessarily be inculcated into the organisational culture and ways of working that previous Derby centric teams who used to hold this responsibility were and could be seen as 'outsiders' to some in the organisation who voiced concerns that without 'Derby folks', in the CSCs for example, problems could arise in terms of standardisation of service delivery and quality.

The homogenised group identity of 'Derby folks' are in this example a metaphor for the accepted in-group, one that presents a low risk to the organisational culture due to their long-term association with the company, knowledge of its workings and interpersonal acceptance by participants through social interactions. Brewer (1979) argued that classifying people into defined groups, even subjectively offers personnel the ability to define both 'in-groups' and 'outgroups'. From the comments at section 5.5.2 the researcher assessed that there was a tendency to group bias, based largely on relational and comparative assessment of members and groups that identify with and uphold the organisation's values. In this case the homogenous group was Derby employees with the heterogenous group being any new staff in CSCs and those in strategic alliances to help deliver the organisation's product-service offering.

In the context of this research the theme of Belonging brings to the fore the question of diversity. Whilst not wishing to delve too far into the origins and complexities of diversity research it is acknowledged that today's workforce is a diverse one with both primary and secondary characteristics of identity to contend with and as such managing these varied and complex characteristics is challenging for management. Moreover, the very concept of diversity is idiosyncratic in nature (Rahim, Oluwafemi and Afolabi, 2017) being something that is created by group members who identify with others as divergent (heterogenous) or similar (homogenous).

The question of diversity was not a primary area of research; nevertheless, when participants were asked to describe the organisation in a single sentence an interesting dichotomy appeared between the male and female interviewees in their interpretation of the general characteristics of the firm- its identity. However, a caveat is required before further examination. It should be noted that the

number of female participants in this study was very limited (four in total); nevertheless, considering their seniority within the case study organisation this researcher saw their contributions on this subject as worthy of analysis and comment.

Within diversity literature there is general agreement that a natural tension exists between the desire for homogeneity and heterogeneity in organisations often captured in their desire to promote greater diversity (Carrell, Mann and Sigler, 2006). However, from the dialogues in section 5.5.2.3 by the female participants, there was a clear belief in a dominant homogenous characteristic displayed in the company, particularly in terms of gender and race, that of an organisation dominated by male, white, and UK centric individuals.

Interestingly, when this schema was presented back to some of the male participants there was a grudging acknowledgement of its veracity:

'umm.... It is certainly a view I have heard, and I think there is definitely some truth in it!'
(Interviewee E20)

In essence, the challenges identified in section 5.5.2 are supported by homogeneity and heterogeneity tensions experienced by group identification. Why this is problematic is that in questioning the culture of the organisation in terms of diversity some participants are beginning to question their sense of belonging and if reality is not consistent with the individual's perception of both group and organisational values they may question "*Do I belong here?*", for example:

'If I want to just carry on and just keep at this grade/ level then I could stay here, but if I want to progress, I would have to leave as it would be very difficult from me to progress further in [name of case study organisation] as a woman...'
(Interviewee E14)

'I still think you hit a sort of ceiling if you're a female in the business at the moment.... I think if I'd left the business and gone to another company, I'd probably be more senior than I am now...'
(Interviewee E8)

The tension therefore between homogeneity and heterogeneity is one that has a distinctive and recursive characteristic embedded within the Belonging challenges. The identification and

recognition of this paradoxical tension may enable management to promote integrative solutions to the challenge of identity, solutions that respect both homogeneity and heterogeneity in groups emphasising the value of their distinctiveness whilst upholding their synergistic value to business.

In summary, when analysing Mindsets what is being discussed is how individuals and collectives construct their beliefs about the nature of the world around them (Dweck and Yeager, 2019; Priester and Petty, 2016) and as such they are important as they shape people's attitudes (Dweck, 1999). Throughout the servitization literature scholars have represented the need to establish a new service-focused orientation across the entire firm and supply chains as a key criterion for a successful servitization transition (Ambroise, Prim-Allaz and Teyssier, 2018; Barquet et al., 2013; Luoto, Brax and Kohtamäki, 2017b; Martinez et al., 2017; Raja, Green and Leiringer, 2010; Vargo and Lusch, 2004a, 2008b). However findings in this study would seem to support the observation of Story *et al* (2017) that inculcating a service mindset across an entire company is not just difficult but not even universally accepted in manufacturing. Indeed, in line with paradox thinking, '*is actually about maintaining some level of distinctness between the two groups in terms of culture*' (ibid, p. 8) yet being able to synergise both mindsets to deliver integrated solutions to meet customer needs.

In the servitization literature this duality of mindset is frequently described as being between that of G-DLogic and S-DLogic mindset. In this research, although being a favourite scholastic exemplar of servitisation success (Baines et al., 2013) such dualistic tensions were clearly still present in the organisation, as can be seen in the comments demonstrated by many of the senior management's penned dialogical discourse at sections 5.23.2 to 5.23.3.

However, in reviewing both the interview data and literature this was perhaps not an unexpected result for despite authors, such as Baines, Lightfoot and Smart, (2011); Baines and Lightfoot, (2013) and Story *et al* (2017) suggesting that employing individuals with key boundary spanning skills could bridge product and services cultures, in this study the employment of such individuals, if they could be found, into services areas of the business was no guarantee of changing their mindset; for many the pull of working on the 'shiny toys' was often too strong to resist and their professional group

identification as engineers meant that many still identified themselves and the organisation through an engineering mindset.

The findings from this study extends prior servitization research on the need for a mindset change within organisations. The mindset currently associated with the change in servitization is that of G-DLogic to S-DLogic. However, this research demonstrates that there are in fact several cognitive mindsets at play, and that generalising the change of mindset in binary terms of G-DLogic vs S-DLogic only fails to consider sufficiently the contextual nuances associated with the construal of an individual's interpretation of mindset.

Consequently, the findings of this study extend the concept of mindset by encompassing four additional novel and contextually specific mindset tensions: global-local, 'shiny toys'-'aftermarket', engineering-service and homogeneity-heterogeneity (Figure 5.9) with section 5.23 describing how such novel mindset tensions underpin the thematic challenge of Belonging.

5.24 Learning Tensions

In this final section on recursive challenges, the discussion centres on the intra-organisational structural theme of Learning and the interrelated tensions sustaining them (Figure 5-10 refers).

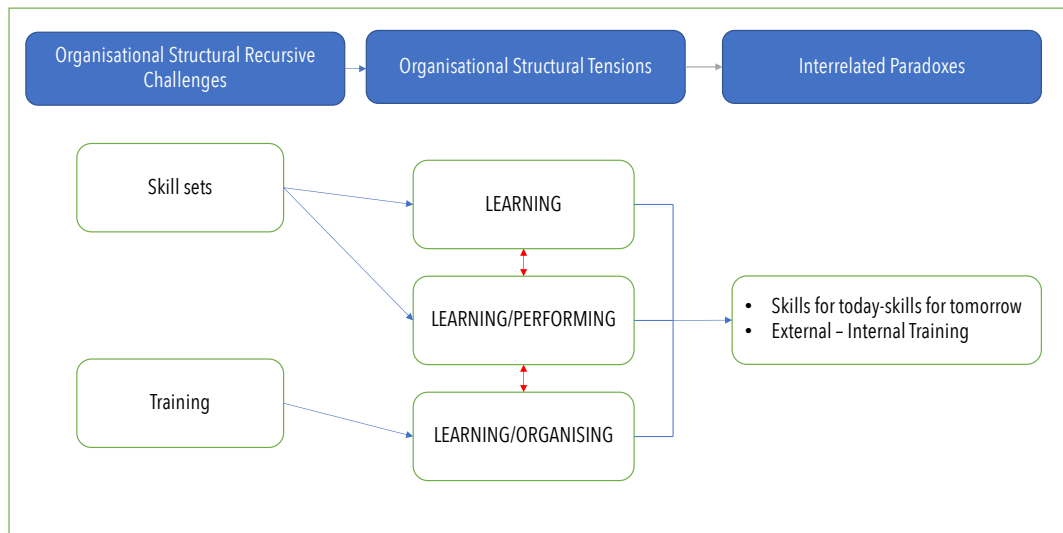


Figure 5-10. Interconnected paradoxes within Learning challenges

In terms of learning paradoxes, Maalouf and Gammelgaard (2016) observe that a common factor associated with the learning paradox rests with the ability of organisations and actors to assimilate a new knowledge, empowering firms to adjust to variations and changing environments (Smith and Lewis, 2011). Such learning paradoxes can arise in organisations when employees want to invest in general skills to aid their employability, whereas organisations seek to invest in more specific skills that will aid their performance and result in greater profitability. In this section the focus will be on identifying recursive tensions under the thematic node of Learning tensions.

The recursive structural challenges under learning were identified as that of training and skill sets with the recursive tensions supporting their continuance presented as 'skills for today/tomorrow' and the contestation between 'external/internal training'. These two tensions, which are symbiotic in nature, are at the core of building current and future distinctive capabilities, and are examined below.

5.24.1 Paradoxical tension: Skills for today – skills for tomorrow

The skills for today/tomorrow tensions refers to the dualistic need for an organisation to sustain success in the present whilst building future capabilities (Andriopoulos and Lewis, 2009; Tushman and Reilly, 1996); what Smith and Lewis refer to as '*building upon as well as destroying the past to create the future*' (ibid, p. 383). The challenge for organisation's therefore is to not to fall into the 'Icarus paradox' (Cunha and Putnam, 2019) where past performance drives management's path dependency thinking which could potentially threaten a firm's future performance by incapacitating a future strategic dynamic capability (Leonard-Barton, 1993; Vergne and Durand, 2011).

In section 5.2.1, participants expressed, an example of this dilemma in what some of the interviewees perceived as a future strategic capacity that was currently underdeveloped and poorly understood by the business, namely digitalisation. In many ways the digitisation space can be seen as a microcosm of the paradoxical challenge facing the organisation in seeking to maintain current capabilities whilst simultaneously having to prepare to replace some of them as new technological advances present new revenue generating and value adding capabilities to customers (Sklyar et al., 2019).

In terms of digitalisation, concern was expressed by several participants in terms of the pace the organisation was moving in the digital space compared to competitors such as General Electric who were viewed by many as '*investing strategically in data gathering and analytics capabilities and in cloud-based platforms*' (ibid, p. 45). However, as a report by KPMG highlighted concerns over moving into the digital space were not uncommon, with many industrial firms struggling to come to terms with how to best address digitalization (KPMG, 2017).

Indeed, several participants recognised that moving into this new space would bring new structural challenges to the organisation ranging from managing both current and future skill sets of employees and whether such skills would be better off being accessed from established external digital performers, to recognising that retaining such personnel would require significant changes to the current ways of working in the business. Scholars also wade in to the debate on challenges that digitalisation pose from concurrent organisational challenges to services (Kowalkowski, Kindström

and Gebauer, 2013), platforms (Cenamor et al., 2017) and supply chain interdependencies (Vendrell-Herrero et al., 2017); moreover, as recognised by several participants the adoption of digitalisation would also necessitate a change in organisational mindsets with regard to resource utilisation and needs, as well as changes to the current perceived organisation culture. The following dialogues capture much of these concerns:

'We should be looking at Microsoft executives, or Apple executives, or Google executives, all whoever it is and paying them a handsome package to figure out what the hell we are doing!'
(Interviewee C16)

'And the other thing is, people in that space, they are not going to be die in the wall [name of case study organisation] people; they will come in and do something sexy and after three years go to another company, so we have got to recognise that, and that is different environment, with a different culture, which will require a different way of managing those people. So, digitalisation will require a different way of thinking from the way we are setup today, with packages having to be different that we would give those people from what we have today!'

(Interviewee E15)

Such views as those above reflect research regarding resource configurations for digitalisation, in that success in servitization will hinge in the future on the *'way digitisation resources are accumulated, assimilated, and used'* (Coreynen, Matthyssens and Van Bockhaven, 2017, p. 45).

The growth of digital services across industries is already blurring boundaries and altering established firm interdependencies and network positions as its adoption across manufacturing promises new opportunities to compete through enhanced PSS offerings (Vendrell-Herrero et al., 2017) and thus new revenue-generating prospects.

Consequently, digitalisation can be seen as a dynamic capability that needs to be developed and adapted as new skills required to operate within this space will revolutionise the current sector landscape. Moreover, as Lerch and Gotsch (2015) note organisations that fail to keep up with these developments *'may find themselves threatened with extinction in the near future, as competitors with more customized, responsive offerings gain advantage'* (ibid, 2015, p. 45).

However, concomitant with developing the new skills and architecture necessary to operate in the digitalisation space, is the organisation's requirement to continue to deliver its current PSS offerings. Whilst research is limited in how firms can organise specifically to leverage digital knowledge and resources (Coreynen, Matthyssens and Van Bockhaven, 2017; Sklyar et al., 2019); nevertheless, learning and innovation are rife with paradoxical tensions with Smith and Lewis (2011) highlighting the difficulty of reconciling logics of learning designed to "build capabilities for the future" and logics of performance designed to "ensure success for the present" (p. 384) and consequently represent a *'reciprocal threat, and combining them generates a series of tensions'* (Garcias, Dalmasso and Sardas, 2015, p. 157). Such a tensions is identified in this study as the interrelated and co-dependent tension of delivering 'skills for today and skills for tomorrow' – i.e., learning, competing, and organising to meet the skills demanded for future innovation whilst maintaining the knowledge and skills required to deliver on today's.

5.24.2 Paradox of external/internal training tensions

The identification of digitalisation as a future dynamic capability raises another interdependent question concerning how such skills will be learnt. The literature on organisational learning is replete with conceptual and definitional confusion (Templeton, Lewis and Snyder, 2002; Crossan et al., 2011) despite being a corner stone of organisational theory (Watkins and Kim, 2018). One reason presented by some scholars for this confusion lies in the approach taken to conceptualising learning in organisations, which appears to fluctuate between the behavioural, cognitive, and cultural (ibid).

In this case study, there appears to be a strong cultural tradition of internal training. For example, engineering training is delivered internally at two levels: for graduate engineers coming from universities, the case study organisation runs graduate programmes of varying lengths with some programmes designed to develop the technical expertise and business acumen the organisation needs, while others seek to develop future managers and fast track them to leadership roles within the company.

For none-graduate entry there is an engineering apprenticeship scheme. For personnel operating within the services arena the delivery of the dynamic capabilities necessary to deliver the organisation's service offerings were presented as skills that could only be delivered in-house. Accordingly, such views can be construed as being both cultural and cognitive in their belief that the manifested complexity of both the environment the organisation operates in, and the complexity of its integrated solutions, means only internal training can develop employees with the necessary skills necessary to effectively and efficiently operate, but can also be viewed as a means of maintaining uniformity in thinking:

So, you have to be able to deal with people at all levels of organisation. You have complexities of government, you might have countertrade and off-set elements to deal with, political tensions with that activity before you even kick-off with what and how are you going to pitch your sale? Is it a new airline and do they understand [name of case study organisation]? is it a single narrow-body operator? What previous wide-body have they got and what competitor's products, and what do they know about it, and how will our products perform in that particular market? And so to get the right people in who can balance all these things before you even put a proposal together, it is quite difficult.

(Interviewee C29)

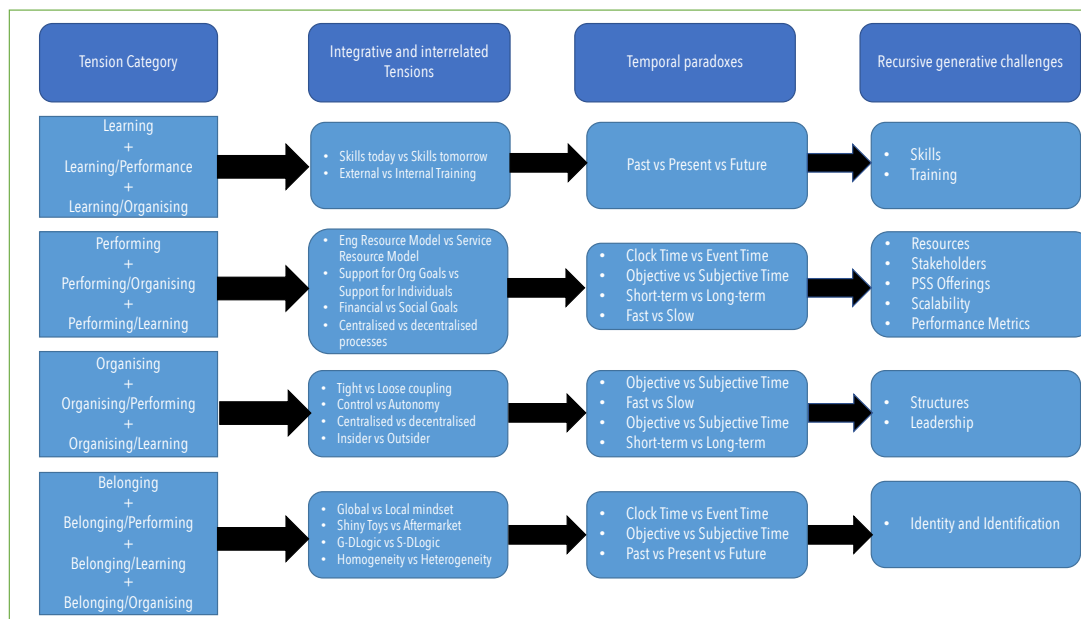
The dilemma over internal/external training is arguably a persistent challenge for organisations as employee training is essential for developing the skillsets necessary to sustain and grow a business. The most obvious benefit of internal training is that it is the most cost-effective solution. Moreover, internal training is often more informal and delivered by staff conversant with the organisation. However, whilst this may appear to be beneficial, familiarity with the business can also have a negative impact. Internal training can present a narrowed perspective of what is capable within the business and as such could reduce the potential for more ambitious training to be implemented.

Conversely, utilising external training can provide organisations with an outside perspective which may offer a new way of approaching your business that an internal trainer may not have considered. What can be discerned from the comments at section 5.2 and section 5.2.1 is that the challenge of learning can be observed through the dichotomy of capabilities needed to deliver explorative and exploitative action. From this dichotomy, the potential for conflicting demands across the organisation in terms of maintaining skills and learning new ones, and who should deliver them are

invested in the interrelated and co-dependent paradoxical tensions of skills for today/tomorrow and external/internal training provision.

For convenience, Table 5-3 below summarises the recursive challenges discussed within this chapter together with the generative tensions that support their sustainment. The framework thus captures the core concepts of Smith and Lewis' definition of a paradox, namely that they are '**contradictory**, yet **interrelated** elements that **exist simultaneously** and **persist over time**' (ibid, 2011, p. 382) but it goes further. By incorporating Slawinski and Bansal's (2017) temporal tensions within the thematic nodes identified in this research it advances Smith and Lewis' model by offering insights into the influence that different temporal paradoxes can have on organisational challenges.

Table 5-3. Recursive challenges, tensions, and temporal orientations



5.25 Summary

Section 5.21 to 5.24 presented the recursive challenges identified through a cross-case analysis of the intra-organisational challenges' scholars posit an organisation would face if it wished to initiate a servitization strategy as determined from a systematic servitization literature review and compared against the findings identified from an empirical analysis of an established servitized manufacture.

This was then followed by a discussion on the interrelated and interdependent nature of the tensions instantiated within the challenges, including the temporal orientation supporting their generative qualities and recursive nature and presented holistically in Table 5-3.

It should, however, be noted that the list of challenges and tensions identified in this research are not meant to be exhaustive, but rather illustrative of the complexities underlying a servitization strategy.

Overall, the study highlights the complexity of delivering a PSS strategy, and questions therefore the overly simplistic assumptions and designs for its successful delivery and sustainment prevalent in much of the meta-narrative in the servitization literature. The study questions the linear and normative nature of much of the literature's response to organisational challenges, presenting the case study organisation as an entity facing perpetual schismogenic challenges and tensions rather than one in an equilibrium state, despite its much-vaunted listing by many scholars as an exemplar of servitization success. Consequently, this study sought to present a more sophisticated understanding of the emergent and nuanced challenges during PSS transition and its delivery, together with the inherent paradoxical tensions so constituent within complex autopoietic systems. Table 5-4 presents a consolidation of the research findings from this study, which in the next chapter are discussed with regards to their implications and contribution to theory and practice.

Table 5-4. Summary of research findings

No	Research Finding
1	A conceptual framework based on Smith and Lewis's (2011) typology of organisational tensions but developed further to enable the presentation of a holistic, contextual model capturing the challenges facing an established servitization provider as presented from analysis of senior management discourse.
2	An analysis of extant servitization literature juxtaposed with case study findings identified 10 recursive challenges.
3	Analysis of the recursive challenges identified 10 conceptual tensions embedded within them, representing causal agents for their recurring nature.
4	The research identified that the tensions embedded within the recursive challenges are frequently interconnected and interrelated.
5	Five temporal paradoxes have been observed within the recursive challenges.

6 DISCUSSION AND CONTRIBUTION

This chapter presents a discussion on the significance of the research findings identified in Chapter Five in relation to the current state of theory as expounded upon in Chapter Two. Furthermore, it draws together and summarises the conclusions of the study, highlighting this thesis' contribution to knowledge and explores its limitations and opportunities for further study.

The novelty of the research presented in this paper lies in the empirical evidence uncovered at the micro-level of analysis of the causal conjunctions identified by individuals who are central to the delivery of the case study's servitization offerings and identified, and presented, as intra-organisational structural challenges facing the organisation. The findings therefore offer an insight into the '*underlying dynamics of servitization from an individual-level*' previously identified as a lacuna within extant servitization research (Lenka et al., 2018, p. 334).

Chapter Five, sections 5-1 to 5.11 demonstrate that the challenges identified act as antecedents for a range of related tensions, with many of the temporal tensions salient across all challenges, while the salience of others was contextually moderated. The findings relating to the intra-organisational structural challenges within the case study organisation are consolidated within a novel conceptual typology (figure 5-1 refers), drawing as it does upon the work of Smith and Lewis (2011) but developed and broadened by incorporating empirical evidence from a servitization context.

The purpose of this typology is twofold. First, it addresses the initial focus of the research question, namely:

"How does the intra-organisational structural challenges of an established servitization organisation compare with those of firms undergoing initial servitization transition...?"

It did so by capturing the polyphonic views of organisational members in terms of the perceived situated challenges they thought faced their organisation and then framed them within a template of organisational tensions to portray their reification, highlighting not just their interrelatedness and interconnectedness, but how such intertwined tensions add increased complexity to an already complicated process.

The typology therefore contrasts with much of the extant servitization literature which tends to present a more reductionism approach to organisational challenges. In this study, capturing participants' views on their opinions as to what challenges they are facing today, and in the future, and placing them within a framework of intra-organisational structural tensions enabled the researcher to challenge the overly simplistic and linear presentation of organisational challenges extant in much of the literature by creating a more comprehensive, holistic picture of intra-organisational challenges, one that captured the organisational complexity and conjunctive nature of the firm delivering a servitization strategy as made sense of through member's discourse.

Second, such a framework, the researcher argues, supports Tsoukas (2017) contention that '*theoretical complexity is needed to account for organizational complexity*' (p. 1). It thus presents a response to a number of criticisms, such as those questioning the overtly simplistic assumptions regarding servitization challenges (Kowalkowski et al., 2017; Raddats et al., 2019) together with censure over a lack of insights from an individual's perspective on the dynamics of servitization delivery issues (Lenka et al., 2018). Additionally, it addresses specific concerns over the paucity of servitization studies using paradox theory (Kohtamäki, Rabetino and Einola, 2017) and Rabetino et al (2018) call for studies to conceptualise paradoxes from a servitization perspective.

As such the utility of this research lies in sharpening the focus on organisational challenges within servitization by enhancing their conceptual clarity through holistic modelling within a framework of organisational tensions. The typology at figure 5-1 therefore offers a visual guide for management that captures and frames the complex, dynamic nature of intra-organisational structural challenges facing the case study organisation and how such challenges can generate organisational tensions. The visual depiction of the holistic nature of these challenges and their interrelated and interconnected nature could help management broaden discussions on the impact their decision-making to address such challenges may have on other challenges not necessarily implicit at first glance.

In addressing the second element of the research question, namely:

“... and why could instantiated tensions within such challenges support their recursive nature?”

Chapter Five, sections 5.17 to 5.24 identified and presented an analysis of tensions deemed to be contributing to the recursive nature of certain challenges. These recursive challenges were derived from a comparative analysis of the meta-narrative within servitization literature on organisational challenges against the challenges identified from the empirical case study.

These findings were then synthesised into an innovative framework (Table 5-3 refers) that embraces the thematic nodes of Smith and Lewis' intra-organisational structural model (2011) together with the identified integrated and interrelated tensions supporting a discrete recursive challenge. Finally, the framework incorporates temporal factors that could influence both their interpretation and sustainment.

In summary, this study sought to examine the comparative challenges facing an established provider of integrative product-service offerings against the challenges presented in much of the servitization literature, and what if any tensions could be identified that might be the generative cause for the recursive nature of some challenges. The outcome of this research led to the following four findings:

6.1 Categorisation and Empirical observation of challenges

<p><i>Research finding No 1: A conceptual framework based on Smith and Lewis's (2011) typology of organisational tensions but developed further to enable the presentation of a holistic, contextual model capturing the challenges facing an established servitization provider as presented from senior management discourse.</i></p>

The typology at figure 5-1 offers an interpretation of servitization challenges in contrast to their programmatic presentation in literature and broadens and extends the work of Smith and Lewis's (2011) conceptual model of organisational tensions. Broadening was achieved by contextualising Smith and Lewis' conceptual framework by juxtaposition it with challenges empirically constituted and supported by interviewees dialogic statements. As such the new framework is a reification of Smith and Lewis's model and represents a broader conceptual understanding of servitization challenges

(noteably, Martin and Horne, 1992; Brax, 2006; Baines *et al.*, 2009; Martinez *et al.*, 2010b; Alghisi and Saccani, 2015; Story *et al.*, 2017; Zhang and Banerji, 2017) incorporating as it does the fact that challenges are embedded with tensions, often paradoxical in nature.

Thus, this typology provides a visual model to help categorise the servitization challenges in a holistic manner, encapsulating the nexus between organisational tensions and servitization challenges. In doing so the framework reconceptualises how management perceive the complexity inherent in a servitization strategy.

6.2 Categorisation and Empirical observation of tensions

<i>Research Finding No 2:</i>	<i>An analysis of extant servitization literature juxtaposed with case study findings identified 10 recursive challenges.</i>
<i>Research Finding No 3:</i>	<i>Analysis of the recursive challenges identified 10 conceptual tensions embedded within them, representing causal agents for their recurring nature.</i>

Findings Two and Three are consolidated within a novel conceptual typology of organisational recursive challenges (Table 5-3 refers), which includes the identification of the instantiated tensions embedded within identified intra-organisational structural challenges, together with temporal paradoxes, both of which are presented as contributing to the challenge's recursivity. This typology addresses one of the study's primary purpose of identifying recursive challenges and how conflicting, contradicting, and at times converging tensions are instantiated within them.

The study extends prior work on servitization challenges through the identification of ten recursive challenges identified within the case study organisation, namely: Skills, training, resources, stakeholders, complex offerings, scalability, performance metrics, structures, leadership and, identity and identification. The identification of these recursive challenges' highlights that in contrast to much of the extant literature which identifies challenges in terms of linear issues that can be solved, this study highlights that the complex nature of organisations and their adaptive needs to fit into changing and ever more complex and evolving environments spurs multiple and interrelated embedded tensions

(Smith and Lewis, 2011) often remaining latent until changing environment factors generate them. Empirical evidence for the ten recursive challenges and ten tensions has been provided in chapter five.

At present there is a paucity of research around generative tensions embedded within servitization challenges (Rabetino et al., 2018) due predominately to the hegemonic dominance of a contingency-based approach to their examination. This work therefore contributes to the field of servitization scholarship by examining servitization challenges through a paradox approach as an alternative to the dichotomous 'either-or' thinking traditionally encountered in previous studies. Consequently, as this study has shown adopting a paradox approach has potential to shed a new light on a regular issue not just for researchers but also for management.

Finding 3 demonstrates that the combined effects of these multiple tensions can spur recursive tensions because solutions to organisational challenges are not always definitive in nature and by adopting a declarative statement to such challenges as identified in Finding 1 ignores the instability and duality of tensions that defines them as challenges.

Consequently, this study develops both the servitization and paradox perspective further through *'reflection-in-action, in the tradition of Argyris (1994) and Schon (1983), rather than through generating lists of 'best paradoxical practices'* (Cunha and Putnam, 2019, p. 100) reflecting that challenges can have within them tensions that are contextually aligned, and sensitive to time and path-dependent.

6.3 Identification that tensions embedded within recursive challenges can spur interconnected and interrelated tensions

Research finding No 4: The research identified that the tensions embedded within the recursive challenges are frequently interconnected and interrelated.

This study extends on the current studies concerning servitization challenges by identifying that supporting tensions embedded in many of the challenges can be interconnected and interrelated. While single tensions can be generative of many challenges identified at Figure 5-1 it is in the recursive challenges (Table 5-3 refers) that paradoxical tensions become foregrounded and of interest.

Many studies regarding the efficacy of paradoxical tensions have concentrated on identifying a single tension for generic and common generalisation (Sheep, Fairhurst and Khazanchi, 2017) presenting the dyad as binary and all-inclusive, interdependent opposites; however, in studying complex environments such analysis limits our understanding of the constitutive power that multiple tensions can have on the challenges identified. Moreover, such an approach breeds narrowness and complacency which can spur reinforcing cycles both positive and negative in nature (Lewis, 2000; Smith and Lewis, 2011).

To date, there is a paucity of research in this area; accordingly, this study looked to address such concerns by extending both paradox and servitization studies by focusing on the interrelationship of tensions that act as progenitors for other tensions that can lead to interwoven paradoxical knots (Sheep et al., 2017). Thus, Finding 4 builds upon Finding 3 by showing the interrelationship of the tensions supporting the recursive challenges identified.

The idea of interrelated paradoxical tensions within the framework of Table 5-3 highlights that the polar opposites of a paradox are not merely intertwined in a state of tension but are in fact the very substance

behind the challenges identified. Figure 6-1 provides an example of the interrelatedness of tensions and looks at the how two binary opposites or dyad progress to become interrelated with other tensions.

In this example the double paradoxes lie within the tension of Mindset which then spurs tensions regarding resource allocation models resulting in tensions felt by management in balancing organisational objectives with a duty of care for staff.

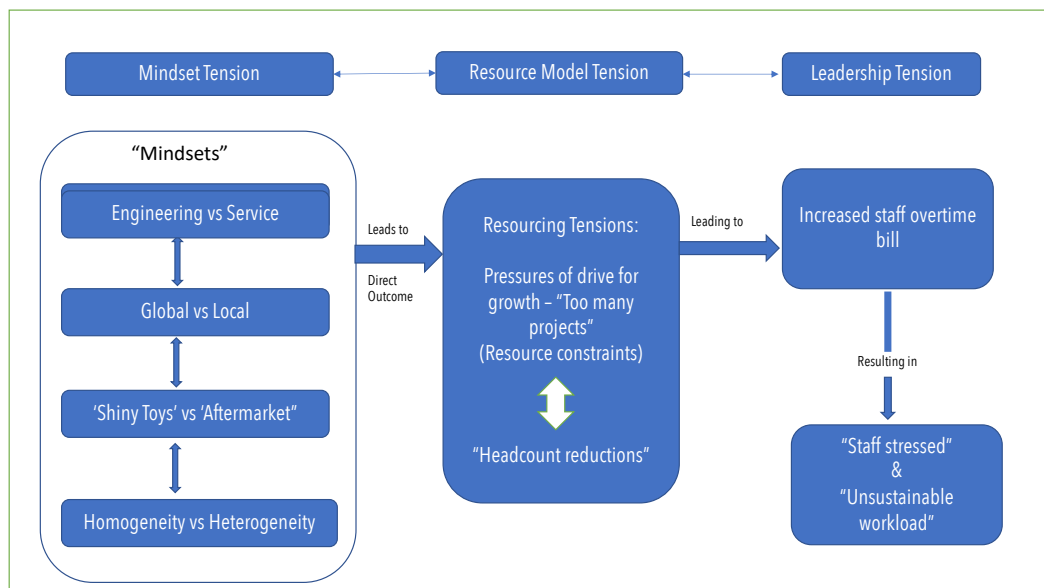


Figure 0-1. Example of interrelated tensions across tension categories

Figure 6-1 provides an empirical example of Sheep et al, 2017's contention '*that tensions do not stand alone*' (ibid, 2017, p.472). As such Finding 4 identifies an alternative method for researchers to understand servitization challenges by focusing on what underlying tensions exist to support them, but then rather than explore the tensions as binary manifestations of contradictory yet interrelated elements, instead look to explore their interrelated and interconnectedness and how their intertwined nature might conflict with or exacerbate one another. The diagram shows for example how the mindsets identified and discussed in Chapter 5, (section 5.23), can spur performing tensions, specifically in this example related to resource model tensions (section 5.22.1) which can ultimately lead to leadership tensions (section 5.21.2).

Accordingly, servitization scholars could broaden the scope of the field by establishing the interrelationship of tensions and how their interwoven nature might trigger or amplify other tensions contributing to recursive positive and negative cycles of organisational challenges. Such an approach has only been touched on in this work; nevertheless, it has shown that it could offer interesting and alternative reflections of underlying challenges facing organisations not only those within established servitized entities but also for firms wishing to undergo the servitization journey.

6.4 Temporality

Research Finding 5: Embedded within paradoxical tensions lie temporal paradoxes.
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The last finding from this research concerns another area of research where there is a paucity of existing knowledge of its impact in both servitization and paradox studies, that of temporal tensions. The study of temporality is something that scholars have repeatedly suggested is essential for our understanding and advancement of organizational science (Ancona et al., 2001; Ancona, Okhuysen and Perlow, 2001; Bluedorn, 2002; Kunisch et al., 2017), yet it remains a call that on the most part has been unheeded (Shipp and Cole, 2015) and is particularly absent in the servitization and paradox corpus. At Appendix I, is a short primer on the theoretical logic underpinning temporality to identify important aspects of time that shape this review and critique.

The absence of temporal reflection across paradox and servitization research is puzzling for in organisations time matters being a control variable (Langley et al., 2013) often presented in terms of a critical dimension for organising a firm's life, coexisting as it does '*within a wider organisational and institutional settings*' (Butler, 1995, p.936).

In terms of temporal discourse relating to servitization these have traditionally been represented in terms of strategic binary choices such as long-term or short-term financial planning, financial reporting timetables, project planning and allocating resources to meet task deadlines, or in relation to stakeholder pressures for short-term exploitation actions in contrast to a longer-term (exploration) focus of the SLT (Brunelle, 2017). As such time is frequently presented as an absolute, homogenous, and

linear mechanism that can be atomised into manageable and meaningful units. Such an objective view pervades western thinking, often referred to as 'clock time' (Ancona, Okhuysen and Perlow, 2001; Dawson, 2014; Reinecke et al., 2015); however, the literature also shows that time can also be subjective and as such can represent a plurality of views in which people can experience time differently, what researchers of temporality refer to as 'event time' (Crossan et al., 2005; Orlikowski and Yates, 2002; Slawinski and Bansal, 2015, 2017).

Adopting a paradox lens allows one to explore how, in this study, organisational tensions as generative conditions for recursive challenges become salient. However, while paradox research hints at notions of time and according to Smith and Lewis's (2011) definition of a paradox as '*contradictory, yet interrelated elements, that exist simultaneously and **persist of over time***' (Ibid, 2011, p. 382) is one of its defining characteristics, there appears in much of the literature no boundary conditions for what '***persist over time***' looks like.

Accordingly, there is scope to deepen such analysis and as such this study contributes to both paradox and servitization research domains by bringing into focus the fact that within the paradoxical tensions sustaining servitization challenges identified in this research there lies within them a temporal component. Using Slawinski and Bansal (2017) typology of temporal tensions and overlaying that with the typology of organisational tensions (Table 5-3 refers) enabled the researcher to capture a more holistic picture of those inter-organisational structural challenges that appeared recursive in nature by identifying the embedded tensions supporting them, together with discrete temporal tensions showing how temporality is both produced in situated organisational challenges and shapes participants' perspectives on them.

Adopting such an approach to this research broadens Smith and Lewis (2011) model by incorporating temporal dimensions of time into the typology of challenges. Thus, offering the opportunity to understand how individual's perception of time shapes their understanding of reality, and how the heterogeneity of such perspectives shapes not only an individual's construction of an issue but also shapes their responses to them.

This revelation of paradoxical temporal tensions within the generative cycles of organisational tensions is significant as this area of research has largely been ignored across servitization and paradox research and as such Table 5-3 offers a novel conceptual frame conflating organisational challenges and tensions with temporal dimensions.

The value of such an approach is to challenge the predominately western view of time as discrete and instead acknowledge that time can be heterogeneous and interrelated, subject to individual interpretations and contextual experience. Therefore, epistemic relativism once again becomes important in servitization research and once again challenges the homogeneous approach of previous work in relation to understanding servitization challenges. Utilising a paradox approach of viewing contradictory elements as interrelated and persistent offers the opportunity to develop a richer understanding of servitization challenges and incorporating temporality further broadens this understanding and unearths additional insights into individual's perceptions of reality that may help or hinder the management of such challenges.

Consequently, the inclusion of temporal dimensions allows both researchers and management the opportunity to generate a more holistic interpretation of the challenges they have identified, to challenge the hegemonic dominance of both contingency theory and clock time in respect of 'either/or' solutions and instead embrace the paradoxical approach of both/and mindset.

6.5 Summary

This chapter presented and discussed the study's main findings and key contributions both to the literature and to practice. The final chapter examines its limitations, including directions for further research.

7 Conclusions

This chapter concludes the thesis; it presents a conspectus of both the context of the research and the research approach taken. It discusses the contribution to both theory and practice resulting from this research, together with its limitations, as well as suggested opportunities for further study.

7.1 Context summary

Since 1988 when Vandermerewe and Rada first conceptualised the provision of product and services under the neologism of 'servitization' research on this subject has grown exponentially. However, the complex nature of the transition from product-centric to PSS solutions provider ensures that such a liminality is far from simple (Baines and Lightfoot, 2009; Lightfoot, Baines and Smart, 2013; Bigdeli *et al.*, 2017; Martinez *et al.*, 2017).

Acknowledging such complexity, the focus of this study was to advance the field of servitization by exploring first, what challenges specifically faced an established PSS provider and, second, identify within those challenges what competing demands might cause paradoxical tensions and, in some cases, contribute to their recursive generation. Paradox theory offers a useful lens to explore such complexity, offering an alternative ratiocination from that of the dominant disjunctive style of ingenuous thinking predicated in much of the servitization literature.

Accordingly, the researcher adopted a paradox lens to examine both theoretically and empirically organisational tensions with the aim of broadening our understanding of tensions in general and in a servitized manufacturing environment in particular.

Studies in this field have not always helped in resolving this issue and it is questionable whether many managers or researchers are even aware of such tensions, let alone their generative abilities in terms of recursive organisational challenges. Furthermore, our understanding of the challenges experienced by organisations during the delivery of servitization offerings have tended to be framed in overly simplistic terms in respect of underlying assumptions and solutions (Kowalkowski, Gebauer, Kamp and

Parry, 2017; Rabetino, Harmsen, Kohtamäki and Sihvonen, 2018; Raddats *et al.*, 2019) predicated frequently on the hegemonic reliance of contingencies 'either/or' approach to solutions.

In adopting a paradox perspective, the intention is not to replace dichotomous thinking, as the researcher is aware that not all challenges are impervious to solutions, rather to present an alternative and apercu way of examining servitization challenges. Such an approach thus challenges the current meta-narrative of presenting servitization challenges as a set of disaggregated components. Instead, the value of this study lies in its ability to present a holistic interpretation of the diverse intra-organisational structural challenges facing a case study organisation. Consequently, rather than present these challenges as isolated atomistic elements, paradoxical thinking is conjunctive, it highlights the interconnectedness and interrelatedness of seemingly diverse elements. Thus, it is argued in this thesis that the adoption of 'paradox lens' and embracing an 'And/Both' mindset can help both practioner and scholars to reframe the challenges extant within a servitization strategy and recognise that success in its delivery necessitates management recognise and juxtapose often contradictory yet interrelated logics.

Todate, servitization studies have been limited in their use of paradox theory, yet its contribution could be significant in developing further our understanding of the complexity and ambiguous nature of many of the challenge's firms face not only in the transition to a servitization provider but also for established players in the field; highlighting that many of the tensions embedded within such challenges have the potential to spur other paradoxical tensions if not managed appropriately.

7.2 Summary of research approach

This study adopted an exploratory, holistic, single case study design (Yin, 2014, p. 50), in which an analysis of 31 interviews of senior management from within the case study organisation was undertaken. The purpose of this was to gain from the cohort an in-depth appreciation of the phenomenon of interest, namely the challenges facing an established servitized organisation and through an analysis of their discourses identify the causal organisational tensions generating and sustaining them.

Qualitative data was generated by 31 semi-structured interviews, with additional material from in-house print, presentations, and freely available internet searches. An informed grounded theory approach (Thornberg, 2012) was utilised to analyse the data. This approach resulted in distinct categories of data which were then analysed and presented under a conceptual typology of intraorganizational structural tensions (Smith and Lewis, 2011) to provide a contextualised typology of servitization challenges facing the case study organisation (Figure 5-1 refers).

These challenges were then subject to a 'cross-model' review using literature review's perspective on servitization challenges (figures 2-3 to 2-6 refer) and cross referencing them against the empirical findings from the case study (figures 5-3 to 5-6 refer) to identify recursive challenges (figures 5-7 to 5-10 refer). Once identified these challenges were then examined using a paradox lens to ascertain the paradoxical tensions inherent within them that supported their recursive nature, which resulted in a visual representation of the findings at Table 5-3.

7.3 Summary of findings

The findings from this research provide evidence that paradoxes can impeded servitization delivery and that in an established servitized manufacturer there is a path-dependency element behind many of the challenges currently being experienced. Such a position often stems from the phenomenon known as the 'paradox of success' in which organisations, and more importantly individuals, often focussing on ways that past successes often delivered in a stable operating environment, helped shape their historical consciousness (Seixas, 2004; Suddaby, 2016). Thus, resulting in a reluctance to change from a given path of action resulting in organisations sustaining the same strategies and thinking (Cunha and Putnam, 2019) in more dynamic and complex environments, often with detrimental effects.

In this research, the dynamics of the case study organisation's operating environment are presented as far from stable and in its attempts to adjust to this challenging environment the organisation was instigating significant change initiatives across its structures, processes, and resource management. All resulting in complexities, conflicts, and tensions, many previously latent but now becoming salient, across disparate functions within the organisation. Consequently, a novelty of this study is the use of a

micro-level analysis of individuals' discourses to shed light on the way senior management situate and reify such conflixtions into organisational challenges.

While not all tensions require the adoption of a paradox approach (Gaim and Wåhlin, 2016); nevertheless, the findings in this research offer evidence that embedded tensions within organisational challenges can and do co-exist and how such competing demands are conceptualised arguably affects the way they are addressed. In this study, senior management's reflections on the issues raised show that much of the anxiety identified was in part due to their inability to recognise and balance conflicting demands.

In light of this research, the study generated five key insights: (i) A conceptual typology framework presenting a holistic and contextual model that captured the challenges facing an established PSS organisation, as observed from its own senior managements perceptions; (ii) the identification of ten recursive challenges; (iii) the analysis of the identified recursive challenges resulted in the identification of ten paradoxical tensions as causal agents underpinning their cyclical nature; (iv) the observation that the recursive tensions are interconnected and interrelated often spurring other paradoxical tensions; and (v) paradoxical tensions contain within them multiple temporal dimensions which can affect the nature not only of the tension but actors perceptions.

7.4 Theoretical contributions

The contribution of this study is of interest for numerous reasons. First, it extends the servitization knowledge base by addressing its lack of contributions from paradox theory (Kohtamäki, Einola and Rabetino, 2020) and as such offers an alternative analytical lens to study servitization from that of previous traditional decontextualising studies and therefore has the potential to open up new avenues of research; a worthwhile outcome surely to keep the field energetic and polyphonic.. Furthermore, it answers Rabetino et al., (2018) call for empirical research on paradoxes in servitization.

Second, the findings from this study confront the somewhat traditional linear and simplistic assumption within servitization literature on organisational challenges as being univocal. Although the challenges identified in this research have currency with previous studies, they nevertheless show

how theory and practice are more divergent within an established PSS provider. Moreover, the existing literature narrative reveals little about recursive challenges, preferring instead to frame the transition from product-centric to PSS offering as a linear progression between two steady states: one ex-ante the other ex-post, offering a myriad of recommendations for the 'transition' journey.

As such the narrative on servitization while encompassing a variety of research perspectives (Baines and Lightfoot, 2013; Baines, Lightfoot and Smart, 2013) has been criticised by scholars such as Kowalkowski et al (2017), Rabetino et al (2018) and Raddats et al (2019) as presenting overly simplistic assumptions and explanations of servitization struggles (Kohtamaki, Einola and Rabetino, 2020). The evidence in this study supports that perspective, arguing that the traditional reductionist perspectives extant within much of the literature rather than address the complexity within the phenomenon offer generalisations on organisational challenges that lack an understanding of the context-specific subtle nuances of both sector and organisational environmental fit (Neu and Brown, 2005) in their development.

Consequently, much of the current research fails to comprehend the true complexity of the servitization phenomenon presenting instead paradigmatic assumptions on organisational challenges as static, atomistic entities, capable of being resolved by management. It should be noted however that this study is not about disproving previous work on servitization challenges, in fact the researcher holds past work in great respect, but the researcher believes the time has now come for work on servitization to move away from simplifying this complex phenomenon to one that embraces its complexity, for to quote Ashby "*only variety can absorb variety*" (Ashby, 1956, p. 207).

Third, this study challenges the traditional management approach of binary 'either/or' thinking in relation to servitization challenges, believing such disjunctive thinking to be deeply flawed and lacking contextual understanding. The research highlights those tensions embedded within servitization challenges are not always reduceable to 'either/or' solutions, requiring a more conjunctive thinking approach, one that is able to conjoin the diverse elements needed to deliver integrative solutions.

Indeed, the adoption of a binary thinking in the past was presented by some participants the path-dependent approach (David, 2001) that has led to the recursive challenges now facing the case study.

Fourth, the study specifically identified ten recursive challenges with ten novel tensions acting as causal agents for their sustainment. The research thus empirically demonstrates the value of a paradox lens for researching servitization challenges. By viewing organisational structural challenges collectively rather than individually enables a more holistic analysis to be undertaken of the multiple embedded tensions within them allowing for a better understanding of how their interconnected and interrelated nature could be triggers or amplifiers for other organisational tensions which could jeopardise servitization delivery efforts.

Finally, the study was the first to introduce temporality into the discussion on servitization challenges, recognising how socially constructed temporal perspectives can not only shape an individual's perspective on challenges identified but also shape their responses. In utilising paradox thinking and embracing temporal dimensions to study servitization challenges it is argued helps improve our understanding of the interrelatedness of contradictory elements embedded within many of the challenges identified, include conflicting polarised temporal tensions such as short-term vs long-term, objective verses subjective, and clock time verses event time which could be contributing factors to organisational structural tensions. Indeed, the dominant focus in western manufacturing on "clock time", with its emphasis on efficiency rather than learning has been argued by some scholars as a significant cause why both organisations and individuals struggle with sustainability or development goals (see Reinecke and Ansari, 2015; Slawinski and Bansal, 2015, 2017).

Therefore, a more nuanced temporal understanding together with the tenants of paradox theory (i.e., "AND/BOTH" thinking) has the potential to improve both servitization and paradox research. Embracing a paradox perspective AND temporal dimensions offers researchers a novel way to challenge the traditional assumptions of temporal challenges being in conflict with one another ("EITHER/OR") resulting in opportunities to explore new insights on temporal tensions within organisations unavailable through the traditional polarised perspective.

7.5 Practical contribution

This study also made a practical contribution to the study of servitization and paradoxes. In today's increasingly global, fast-paced, and complex business operating environment the pressure on manufacturers to build and sell high-quality products at low prices and deliver consistently good services globally while adapting to local needs (Marquis and Battilana, 2009) is one many manufacturers transitioning from supplying products to supplying products and services encounter (Oliva and Kallenberg, 2003). Within the aerospace sector the acceptance of integrated solutions as the basis of a competitive strategy to address such concerns (Baines and Lightfoot, 2014b) is well established (Johnstone, Dainty and Wilkinson, 2009; Ng et al., 2012; Smith, 2013); however, as commented previously in this thesis delivering such an offering is far from easy (Brax, 2005; Martinez et al., 2017; Rabetino, Kohtamäki and Gebauer, 2017; Raja, Frandsen and Mouritsen, 2017; Ulaga and Loveland, 2014).

Delivering servitization successfully requires the integration of many disparate but interdependent functional areas within a manufacturer; however, such integration inevitably results in a myriad of tensions between various areas of the business. Therefore, managing such a paradigm shift scholars argue requires a change in mindset both for management and staff, one that embraces the confluence of two dominant world views, that of production and services (Baines et al., 2009c; Huikkola, Kohtamäki and Rabetino, 2016; Peillon, Pellegrin and Burlat, 2015).

Paradox scholars refer to such a mindset change as moving from a binary logic of "EITHER/OR" thinking to one embracing an "AND/BOTH" logic (Lewis and Smith, 2014; Miron-Spektor and Paletz, 2017; Smith and Lewis, 2011; Wright, 2015). Several studies have argued that management need to embrace such paradoxical thinking (Hahn et al., 2014; Smith, 2014; Smith, Binns and Tushman, 2010; Smith and Lewis, 2011) if they wish to cope with the demands of modernity. However, such a change in mindset and thinking requires actors to not just understand and reflect on their own circumstances but to embrace and conceptualising the totality of challenges facing their organisation. Conceptualising such totality, however, requires *discursive penetration*, what Giddens (1984, p. 374) referred to as "*awareness that has a discursive form*". Giddens (ibid) argues that managers with a high

level of discursive penetration are better able to understand the subtleties of language together with the denoted and connotated meanings within arguments portraying organisational challenges and tensions.

However, achieving discursive penetration requires management to understand not only their own individual cognition and working environment (vertical integration), but also those of actors operating across the business (horizontal integration). Consequently, responding to such a need, this study offers a conceptual model for capturing and studying the micro and meso implications of challenges experienced in the delivery of a servitization strategy.

The value of such a model lies in its ability to present management with a holistic, communicatively constructed reality derived from discourses with a representative community of senior managers involved in the end-to-end process of servitization. Figure 5-1 therefore represents the collective and interwoven views of organisational members into a model that rather than views such organisational challenges in terms of functional rigidities to be treated in isolation, highlights the interrelated and interconnected nature of many of them and orders them within a framework of intra-organisational structural tensions that are ubiquitous and inherent in all organisational life (Schad and Bansal, 2018; Smith and Lewis, 2011).

Accordingly, such a visual representation offers management a useful communication tool to explore and discuss the totality of challenges identified as well as the underlying tensions supporting such views. With rare exception it is argued such a more comprehensive, yet nuanced appreciation of challenges and organisational tensions has been lacking in much of the servitization literature. Moreover, the level of specificity offers an opportunity for management to not just understand better the practices and constraints that may be contributing to their challenges, but rather than adopting the traditional "Either/OR" binary thinking in responding to such threats, adopting a paradoxical frame of "AND/BOTH" would allow management to reframe such threats and see them as opportunities for service improvement.

A simple, practical example of applying such an integrative typology, was made by the researcher who used the conceptual model at figure 5-1 as a tool to brief back the outcome of this research to a few interview participants. The model, grounded in empirical evidence, presented said cohort with a novel and visually holistic interpretation of the intra-organisational structural challenges facing their organisation.

From those briefed, an interesting comment forthcoming related to the fact that this was the first time that any attempt to capture the totality of managements problematisation of organisational challenges, intertwined with organisational tensions, had been presented to them. Such a visual tool enabled discussions to take place that raised awareness of triggers and amplifiers behind challenges and now rather than 'fire-fighting' individual conflicting demands they were able to appreciate not just the totality and interwoven nature of many of the issues, but also recognise the path-dependency of previous decisions made in isolation of the 'full-picture' as contributing factors to present challenges. Having such a model that captured the holistic, integrative, and dynamic nature of the business challenges proved a useful communicative tool that enabled frank discussions to take place on not just the nature of the challenges and the processes supporting them, but interestingly what organisational behaviours may also be a contributing factor.

Moreover, the exploration of recursive challenges captured in Table 5-3 was used also to present to management an innovative way to consider the implications and antecedents of those challenges that had been identified as recursive in nature. The model explained how certain recursive challenges that organisational members had either explicitly or implicitly raised had their generative power through certain paradoxical tensions embedded within them. Whilst this research never sought to explore how managers should respond to such paradoxical tensions, it nevertheless is argued that that the identification of such paradoxical tensions could enable management to reframe their decision-making in respect of paradoxical tensions, recognising that paradoxes cannot be resolved through traditional binary logic of "EITHER/OR" solutions; thus, rather than attempt to solve such tensions they should

employ coping strategies that accept the uncertainty generated and look to embrace “AND/BOTH” solutions that balances these opposing forces (Lewis, 2000; Smith and Lewis, 2011).

While the typological framework of this study is contextualised for the case study (Figure 5-1 refers); nevertheless, such an approach could be used in other settings and together with the addition of temporal considerations (Table 5-2 refers) offer management a set of tools in which to capture the reification of challenges and explore their interdependencies within a framework of organisational tensions. Adopting such a visual representation could provide a useful reflexive and communicative tool to help management limit the misunderstandings and wrong interpretation of issues facing an organisation as well as provide an explanation for the underlying tensions, reflecting on any interconnectedness which previously would have been invisible, to help explain and support management decisions.

Whilst this study was built upon the paradox model of Smith and Lewis (2011), its value to paradox theory resides in that it has taken a theoretical construct and empirically tested it in a field study and found it to have merit. Moreover, this research has broadened Smith and Lewis’ (2011) work by including a more nuanced understanding of temporality, which as a field of research though well-established has garnered limited research in both paradox and servitization studies.

It is argued that a clearer exposition of temporal dimensions (Slawinski and Bansal, 2017) addresses a perceived weakness in the Smith and Lewis (2011) definitional construct of a paradox. In their definition, Smith and Lewis (ibid) contest that a paradox ... “persists over time”. Such an observation of time is deemed impalpable and too generic in nature and could therefore benefit from a more nuanced understanding of the construct.

Moreover, the use of temporal dimensions would enhance not just the definitional power of Smith and Lewis (2011) characterisation of a paradox but in acknowledging that temporal paradoxes exist enable researchers and management to consider their temporal symmetry and asymmetry boundaries within organisations together with an appreciation of individual’s and group temporal orientation in relation to the cognitively constructed challenges they categorise.

Consequently, a paradox perspective acknowledging contradictory logics as interrelated and persistent, together with an appreciation of temporal dimensions offers management a richer understanding of the dynamic paradoxical tensions within organisations. The addition of temporal dimensions not only addresses the lacuna of Smith and Lewis' (2011) definition of a paradox but enhances the intra - organisational structural tension model through consideration of temporal features as contributing factors to individual's and group interpretation of events. The model therefore offers considerable opportunity for a deeper analysis of how organisational challenges and tensions are entwined with temporal paradoxes providing management with a conceptual framework to better appreciate the totality and complexity of their environment rather than the simplified models present in much of servitization literature.

7.6 Limitations

Like any study this research has limitations that need to be considered. First, the paradox model is not meant to be exhaustive of the challenges or tensions facing a servitization firm but rather to be representative of those identified by a purposive sample (Etikan, 2016; Patton, 1990) of senior management from the case study organisation. As such it cannot be said to be representative of an all-encompassing picture of challenges facing the case study organisation or manufacturers in general, but rather one that captured a contributive collection of challenges facing the case study organisation and as such enabled only a limited identification of specific organisational tensions.

Moreover, the interview data is a snapshot of perspectives and therefore must be seen as having currency at the time of the interviews; consequently, it is acknowledged that the resulting temporal dissonance may raise questions over the validity of some of the participants opinions. That said, one of the aims of the study was to capture the recursive nature of some challenges and the fact that embedded within them were paradoxical tensions which persisted over time supports this researcher contention that the study has merit despite this limitation.

Second, within all research there needs to be a reflexive acknowledgement of researcher bias. Despite being aware of the potential one cannot eliminate it entirely, for in selecting which relevant literature

to be reviewed, the choice of methodologies, which analytical lens to apply for understanding and interpreting the findings, all mean that one cannot be entirely separated from one's internalisation of the phenomenon of interest. Therefore, decisions made during all stages of this research had the potential to introduce bias requiring the researcher to continuously re-evaluate the research process and challenge all pre-existing assumptions and expectations. Nevertheless, despite such undertakings eliminating researcher bias remained a challenge.

Third, the case selection of one organisation, despite allowing for a depth of enquiry makes the generalization of its findings appear problematic. Although this research did not set out to produce generalizable findings, there is nevertheless a potential for transferability (see Gioia, Corley and Hamilton, 2013) of these concepts that might apply to a wider domain.

7.7 Future Research

Despite the number of limitations relating to this research, it nevertheless makes a theoretical and practical contribution. The adoption of a paradox approach within servitization research offers an alternative to the dichotomous contingency approach of 'either-or' thinking encountered in previous studies and has the potential with its 'And/Both' mindset to shed new light across servitization issues not just for researchers but also for management thinking. Such an approach paves the way for further research in several directions, including adopting Smith (2014) clarion call for studies to look at how companies manage paradoxes, and therefore offers opportunity for scholars to specifically look at how servitization organisations navigate and manage them.

Second, in adopting a paradox lens further studies could explore our understanding of tensions through a more nuanced approach in relation to their interconnectedness with temporal dimensions. Such a temporal perspective could further our understanding of the challenges and underlying dynamics in servitization by examining how the subjective perspectives of time in relation to temporal orientations by managers shape their understanding of situations and expectations, and how such understanding may result in certain decision choices. While this study provides only preliminary

insights into this dynamic, the researcher believes this area of research could be highly relevant to future studies within the servitization literature.

Third, research now needs to look at how individual managers respond to paradoxical tensions, understand their motivations and reasons for their responses to specific challenges during servitization. Finally, as this research was of a cross sectional design using a single case study further research could test the findings of this paper using both longitudinal studies and multiple case studies to broaden understanding and observe how individual's responses to challenges and tensions change over time.

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Appendix A – SEARCH TERMS

Following on from a scoping study of relevant literature from the chosen theoretical domains and the resultant set of search terms, the list of search terms was transformed into a set of search strings for each keyword category which were concatenated using "AND" and "OR" operators within database searchers. Asterisks (*) was utilised to capture various forms of words (e.g. use of plural) potentially used in article titles and/or abstract descriptions. After a trial search, and further review, the search strings were amended and refined resulting in the following search strings.

Search string 1	(manufactur* AND ("serviti?ation" OR "product service systems" OR "PSS" OR "services marketing" OR "service practice" OR "service science" OR "service integration" OR "product substituting service" OR "product support"))
Search string 2	((("decision making" OR "decision taking") AND (leaders* OR "top manage*"OR SLT OR "senior leader* team"))
Search string 3	(tension* OR duali* OR paradox* OR contrad* OR dialectic OR ambidexterity OR reconcil*)
Search string 4	(transition* OR "organi?ational change" OR transform* OR "strategic shift" OR "business model" OR innovation)

Figure A-1: Search Strings

Appendix B - INCLUSION/EXCLUSION TERMS

This Appendix displays the inclusion/exclusion criteria used to determine the efficacy of articles generated from databases during the systematic literature review process.

Table B-1. Inclusion/exclusion criteria

Stage	Criterion	Inclusion	Exclusion	Rationale
1	Language	English only	All non-English	Usability by author given time constraints
1	Date of publication	Relevant literature from 1996 to present (2018)	Literature published before 1986	Publication of Vandermerewe & Rada, 1988
1	Geographical boundary	UK, including UK-international partnerships, USA, Europe, Asia.	Outside inclusion zone	Focus of the topic of interest and research question
1	Type of publication	Conceptual and empirical papers including peer reviewed, conference and working papers Books Industry/conference papers	General media articles	To gain a full understanding of barriers and enablers of tensions/servitization transformation linkages Non-industry, general articles will be excluded given potential for low quality
1	Scientific fields	Social sciences including policy, strategy, engineering, innovation, management, psychology, behavioural science	Natural sciences, computer sciences, medical, mathematics, Arts, History	Review question spans business and policy domains.
1	Perspective	Theory side (academics & academic institutions), delivery side (practitioners & firms),	NA	To gain a full understanding of known barriers and enablers from all stakeholders' perspectives within the triple helix
1&2	Relevance	Specified barriers and enablers to managing paradoxical tensions throughout servitization transformation of manufacture, both conceptual and empirical	All papers referring to the strategic rationale for servitization	Although operational journals will report servitization aspects, for the purpose of this review the interest is in the organizational tensions rather than the rational for undertaking servitization.

Appendix C – RESEARCH DESIGN CONSIDERATIONS

This Appendix looks at the choices for the selection of an appropriate research design.

C.1 Research design considerations

The ***experimental design*** is a fixed design (i.e. where the design of a study is fixed before the collection of data takes place) and where the phenomena of interest is usually quantifiable (Robson, 2002). The concept of 'experiment' implies with it the idea that certain aspects can be isolated, and one can manipulate one or more of the variables by the experimenter whilst at the same time control all other variables and, as a consequence, is frequently touted as the yardstick on which quantitative research is assessed (Bryman, 2004).

Cross-sectional design studies are observational studies, just like longitudinal studies; however, the defining feature is that one can collect and compare data on more than one population group at a single point in time (a snapshot as it were) with the aim being to look for patterns of association (Bryman and Bell, 2011); however, both experimental and cross-sectional design approaches tend to focus on specific research questions which can make them appear narrow in scope (Edmondson and Mcmanus, 2007) and may struggle to provide a definitive explanation about cause and effect factors due to the study being a snapshot in time of an event and therefore not fully cognisant of events before the snapshot is taken or indeed any aftereffect .

Longitudinal studies refer to any research that involves taking observations repeatedly spread out over a period of time as a means of collecting data on the mechanisms and processes behind change in business and management research (Bryman and Bell, 2011). However, such a method is considered expensive and time consuming and unless a researcher is already embedded within an organisation, which this researcher was not, then it was not seen as a viable option for this project.

Comparative design, put simply, is about utilising more or less identical methods on a variety of contrasting cases. The idea being that in trying to understand a social phenomenon better using the logic of comparison (ibid, 2011).

Finally, **case study design**. First, and foremost the case study is a research design, and not a method (Buchanan, 2012, p. 355); fundamentally its aim is to explore a research setting in order to examine a phenomenon in order to better understand it (Cousins, 2005). Although there is no universally accepted definition of what constitutes a case study (Grünbaum, 2007; Gustafsson, 2017), being described variously as *'an intensive study about a person, a group of people or a unit, which is aimed to generalise over several units'* (Gustafsson, 2017, p. 2), or as Thomas (2011) advanced *'... analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more methods... that provides an analytical framework within which the study is conducted and which the case illuminates and explicates.'* (ibid p. 513).

Nevertheless, it is fair to say that Yin's (2014) definition, developed over four editions of his book 'Case Study Research: Design and Methods', is one of the most frequently cited exemplars of what constitutes a case study, figure C-1 refers, in which his two stage definition delineates both the scope and features that make up a case study design, extolling its comprehensive nature from its design logic through to techniques and approaches for data collection and analysis.

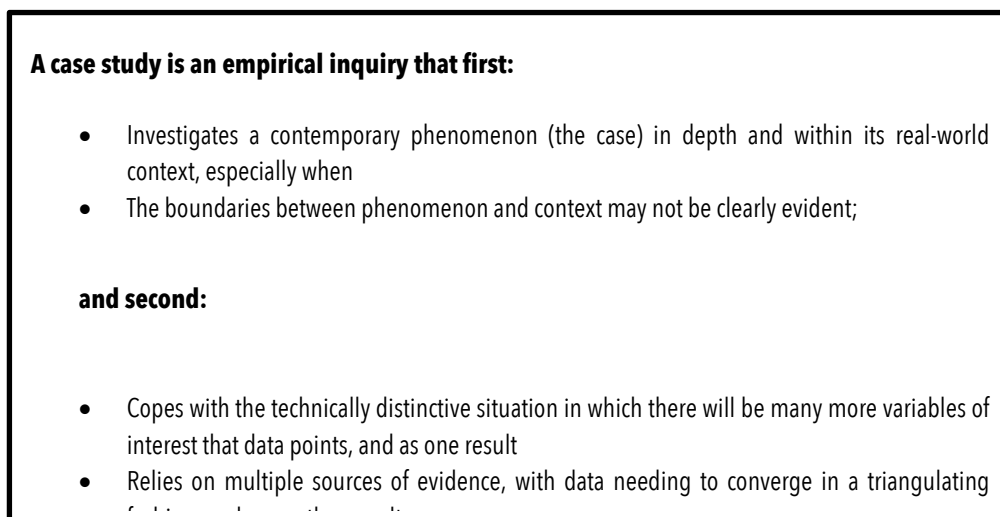


Figure C-1 Case study definition (Yin, 2014, pp. 16-17)

What the above authors definitional concepts appear to highlight is that the potential for case study research is limited only by the researcher's potential (Symon and Cassell, 2012). Moreover, as a research design, a case study allows researchers to exploit a variety of data collection methods, both

qualitative and quantitative (Bryman, 2004; Bryman and Bell, 2011; Symon and Cassell, 2012; Yin, 2014) as well as providing a robust research structure, particularly when a holistic, in-depth investigation is the preferred research strategy (Yin, 2012, 2014).

Yin (ibid, 2014) further identified three specific motivations for undertaking a case study: Exploratory, Explanatory, and Descriptive. Explorative can be seen as utilising a case study to determine whether the topic is worthy of further investigation. An explanatory motive can be seen as looking to determine cause and effect relationships, and descriptive case studies aim to provide a 'rich picture' understanding of the phenomenon under investigation. Stake (1995) posited another three types, which he called: intrinsic (where the case in question is seen as unique and not representative of previous studies), instrumental (a case study that provides insights and develops an existing theory) and finally collective (extends to more than one instance).

Whilst there is no universal definition of what constitutes a case study their use has a long and established history despite concerns about the '*fuzzy and blurred perception among researchers as to what constitutes a case study*' (Winegarden, 1998: p.1); although scholars such as Yin (2014) decried the fact that such a debate has been going on for too long. Despite such concerns, Grünbaum (2007) argues that there remains sufficient general characteristics to provide guidelines as to what constitutes a good case study. These seven characteristics are outlined below:

- (1) *the study object is always in some way related to people, more specifically, interpretations of the social actors' perception of a given phenomenon or the meaning actors attribute to a phenomenon.*
- (2) *the researcher is interested in a contemporary phenomenon, historical studies are thus excluded,*
- (3) *one's perspective is holistic when trying to understand and explain what happens and why it happens,*

- (4) *Fourth, case studies are primarily qualitative, and the objective can be descriptive, exploratory and/or explanatory, that is, they can be theory generating or contribute to modifications of theory,*
- (5) *the researcher has no control of crucial events evolving in the studied context,*
- (6) *the researcher applies numerous data sources in the search of understanding, and finally;*
- (7) *Case study research produces "rich" and contextual.*

(Source: Grünbaum, 2007, p. 82).

C.2 The justification of a 'Case Study' approach

This research focuses on the identification of contemporary challenges and the organisational tensions perceived through the social and cognitively constructed reality of senior management within the Civil Aerospace Group of the selected case study organisation [**Condition 1 and 2 met**]. As qualitative research tends to be exploratory and in-depth (Partington, 2002) this research focuses a lens on the competing demands inherent with the contemporary phenomenon of servitization to provide a 'holistic' and under-researched addition to servitization studies [**Conditions 2, 3 and 4 met**].

The choice of a case study as for the research design for this study also necessitated several additional design decisions. The first related to the choice between a single-case or multiple-case design (Yin, 2014). Single cases can be seen as analogous to a single experiment and deemed useful when collecting data on representative/common, revelatory, extreme/unusual, critical, or longitudinal case.

The choice of a Single-case study has been championed, by some academics, over multiple cases on the basis that they are deemed capable of constructing better theory (Dyer and Wilkins, 1991). Such an approach is deemed particularly suitable when researching areas of interest requiring a thorough understanding of social or organisational processes due to the ability to collect rich data in context (Cassell and Symon, 2004) which can then be used to illuminate the '*deep structure of social behaviour within*' (Dyer and Wilkins, 1991, p. 615). However, single-case study designs have also been criticised because of their uniqueness, and as such questions can arise about their generalizability (Bryman, 2004) and about how well a researcher generates theory from a single case (Eisenhardt, 1989a)

Alternately, Multiple-case designs are often presented as being more robust and compelling (Bryman, 2004), although a researcher needs to be aware of the quantity of data being collected and analysed which can be extensive and may be problematic for the time and means of a single researcher (Symon and Cassell, 2012; Yin, 2014). In reviewing the literature on research design it would appear that the debates could be presented as a conflict between positivist and constructivist epistemologies (Buchanan, 2012) with positivist wedded to deductive methods often critical of small samples, whilst the latter tend towards to an inductive, interpretative agenda supportive of a constructivist perspective.

The second decision concerns whether the design should be what Yin (2014) describes as holistic, where the case study is looked at as a whole or as an embedded design, where more than one unit of analysis are studied within a case, Figure C-2 below refers.

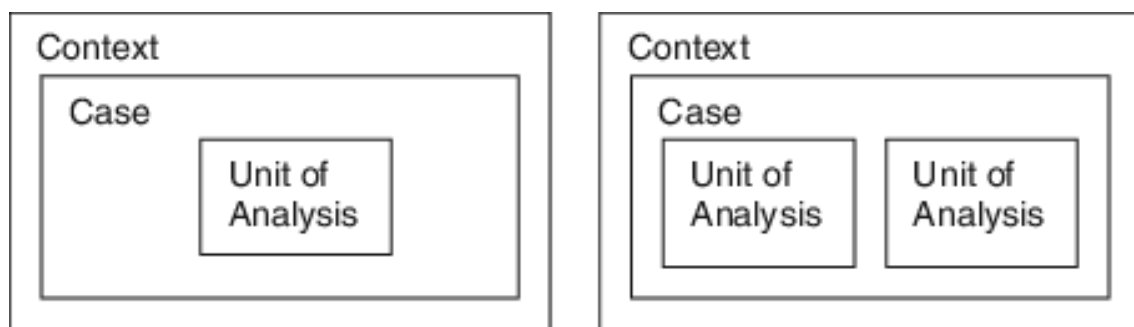


Figure C-2. Holistic (left box) and embedded (right box) research design (From Runeson and Host, 2009)

The researcher chose to focus on a single- case study to garner a rich and intensive description through the examination of the challenges the chosen organisation currently faced as identified through interviewees discourse; recognising that in exploring the personal accounts of participants directly involved in the phenomenon of interest, as well as utilising relevant historical data, the researcher had no control over the crucial events described [**Condition 5 and 6 met**].

The choice for the single-case study was an organisation generally regarded as both successful and at the forefront of servitization innovation and the research would be used to test or indeed enhance existing theory (Bryman and Bell, 2011), as well as provide new insights of the phenomenon under

study and its context [**Condition 7 met**] (Eisenhardt and Graebner, 2007). Considering this assessment, the researcher was content that a case study approach was appropriate.

Appendix D - DEDUCTION, INDUCTION, AND ABDUCTION

This Appendix displays the general principles behind the theorising logics of deduction, induction, and abduction.

Table D-2. Deduction, induction, and abduction: from reason to research (Taken from Saunders et al., 2012, p. 144)

	Deductive	Inductive	Abductive
Logic	In a deductive inference, when the premises are true, the conclusion must also be true	In an inductive inference, known premises are used to generate untested conclusions	In an abductive inference, known premises are used to generate testable conclusions
Generalisability	Generalising from the general to the specific	Generalising from the specific to the general	Generalising from the interactions between the specific and the general
Use of data	Data collection is used to evaluate propositions or hypotheses related to an existing theory	Data collection is used to explore a phenomenon, identify themes and patterns, and create a conceptual framework	Data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test this through subsequent data collection and so forth.
Theory	Theory falsification	Theory generation and building	Theory generation or modification; incorporating existing theory where appropriate, to build new theory or modify existing theory.

Appendix E - Codes and frequencies from initial analysis of interviewees transcripts

Code Number	Description of Code	Frequency
1	Customer expectations	109
2	Suggestion of possible differences in mindsets within the organisation	107
3	Transformation & Change	101
4	Issues concerning alignment	89
5	Issues of Growth and speed	72
6	Short-term and long-term thinking	62
7	Shiny toys	62
8	Aftermarket thoughts	54
9	Issues of employment longevity	53
10	HPC	50
11	Programme & project management issues	50
12	Challenges with CSCs	48
13	Leadership styles	41
14	Headcount constraint issues	41
15	Business plan stresses	40
16	Organisational structure	40
17	Cultural diversity	39
18	Questions overpower& Control vs empowerment	39
19	Differences in perspectives	38
20	Unit Cost issues	38
21	Risk appetite and management	35
22	Refers to skills for today & tomorrow	32
23	Reporting systems and KPIs	31
24	Effective Communications	30

25	External Vs Internal financial pressures	27
26	Digital space	27
27	internal focus on training	26
28	Competitors	25
29	Product and service innovation	25
30	Talent loss through redundancy	24
31	Stakeholder management	24
32	TotalCare concerns	23
33	Derby centric	22
34	Stresses impact pride may have on behaviours	19
35	Accountability and Autonomy comments	19
36	Leadership role	16
37	Customers - market growth	16
38	Informal 3-leg structure	15
39	Power and control governance comments	15
40	Eng vs Service personnel	14
41	Allocation of human resources	13
42	Legacy platforms	13
43	Equipment concerns	10
44	Revenue issues	10
45	External focus on training	9
46	Possible trust issues	9
47	Leadership decision-making	8
48	Refers to bureaucracy issues	7
49	Scale	7
50	Industrialisation to support growth	5
51	Focus of the business	4
52	Customer vs commercial financial challenges	4

53	Stable vs Dynamic	3
Total Frequencies		1740

Appendix F - INTERVIEW CONSENT FORM



1. I, the undersigned have read and understood the Research Information Sheet provided.
2. I have been given the opportunity to ask questions about the study.
3. I understand that taking part in the study will include being interviewed and audio recorded.
4. I have been given adequate time to consider my decision and agree to take part in the study.
5. I understand that my personal details such as name and employee address will not be revealed to people outside the project.
6. I understand that my words maybe quoted in publications reports and other research outputs, but my name will not be used.
7. I agreed to assign the copyright I hold in any material relating to this project to Clive Allen PhD researcher at Cranfield University.
8. I understand that I can withdraw from the study at any time, and I will not be asked any questions about why I no longer want to take part.

Signature of participant: _____ Date: _____

Name of participant in Block capitals _____

Researcher's signature: _____ Date: _____

Appendix G - INTERVIEW QUESTIONS



Interview Protocol:

Establishing rapport:

Researcher introductions, outline of research interest, clarify confidentiality and anonymity of the study. Ensure Interview protocol is explained and signed before commencement of interview.

Research Interest:

To explore how senior leaders, manage the paradoxical tensions inherent within the strategic challenges facing a manufacturing firm delivering advanced services.

Interviewee details: Demographics

In the next phase seek to understand the role of the department within the organisation, its context within the corporate strategy, business model, product, and services.

- How long have you worked for the company?
- How long have you been in this appointment?
- How many people work for you?
- Describe to me your role within the company?
- What services does your department provide?

Data Collection Research Questioning:

N.B: Probe for concrete illustrations..." that's interesting can you tell me more" ...

Research questions

- What do you see as the major challenges facing [name of case study organisation] aviation today and into the future? Why are these problematic?
- Are these challenges new or do you believe [name of case study organisation] has faced them previously but failed to either resolve or engage with them?
- Rolls-Royce is going through a transformation program now, and indeed has gone through many change programmes over the years, what do you see as the purpose of this exercise?
- Some would argue that the transformation is simply about cutting costs as the profit forecasts for new engines with TotalCare servicing are unachievable due to over optimistic forecasts made years ago. Do you see any merit in such a view?
- Why do you believe transformation is necessary?
- Do you believe it will be successful? Why? What currently in your view could hinder the change?
- Looking at the challenges you have mentioned what organisational forms (e.g., business model, culture, structures resources, leadership, etc) sustain them?
- Can you see any tensions between the aims of transformation and the organisation?

Culture

- How would you describe the culture at [name of case study organisation]?
- Do you believe this culture is supportive of change?
- Would you describe the culture where you are working (Outside UK interviewees only) as different from that Derby? Why?

Leadership

- How would you describe the leadership culture within aerospace?
- Has it changed in your time at [name of case study organisation]? Why?
- Do you see any tensions between those involved in the design and build of the engines versus those in the aftermarket services? e.g., required.
- Do you see conflict between customer needs and [name of case study organisation] processes?

Structures

- How would you describe the purpose of [name of case study organisation] global service centres?
- What are its strengths?
- What are its weaknesses?
- Would you describe these as separate business units (SBUs)?
- How autonomous really are these centres?
- There is a desire at Derby to instil, through lean processes, a standardised process across all regional centres as well as Derby, what, if any, issues do you foresee such a desire posing?

- How do or do not the current structures at [name of case study organisation] support yourself or your customers?
- From your comments on the challenges/tensions/contradictions - when you face conflicting demands how does that make you feel?

Performance

- If the strategy is for growth, do you believe the current business plan supports this concept?
- Where do you see any competing demands between the business plan objectives and daily reality?
- Do you see any tensions within the organisation when it comes to performance measures, allocating resources?
- Do you see any conflict between the future challenges you have identified and the current skills of [name of case study organisation] employees?
 - What challenges do you see digitalisation posing [name of case study organisation]-structurally, culturally, skill set, systems?
- With regional service centres now created and the various business units also at Derby these organisational structures can create boundaries and so create problems of coordination and integration (divisions, after all, divide), do you see any tensions in this area?
- If we look at stakeholders across aerospace, we could separate them into external and internal. What external stakeholder tensions if any do you see [name of case study organisation] facing? And do you see within the internal tensions any between the different functions?
- How have you learnt to manage the engagement of competing demands within this organisation?
 - Do you get any training in the management of complex problems/tensions?
- How do you feel your organisation is placed in both its understanding and ability to confront competing demands in the 21st century?
- What do you think are your organization's strengths/weaknesses in this area?
- If it were possible, what would you like to see change or improve within the organisation to help management deal more effectively with the complexity and competing demands, we have identified/discussed today?

THE END, thanks for your time, any questions you may have. Anything you think I might have missed? What do you think would have made this interview more engaging?

- Hand business card out.
- Ask for any documentation that might help e.g., org diagram, info sheets, etc
- IMPORTANT: Seek snowballing of a further 3 suitable candidates for interview from dept or organisation they think may be useful to interview.

Appendix H - Initial contact and preliminary discussion

Although the choice of case study organisation was relatively simple, gaining access to it was more problematic. However, after several months a contact was finally established through LinkedIn with an individual receptive to the researcher request for help. Following this initial contact, a preliminary or scoping interview was held with the individual, a Senior Vice-President (SVP) at his place of work. The primary goal of this initial meeting was to explain in broad terms the purpose, and hopeful outcome of the study and establish whether the senior executive would be prepared to support the researcher in his study and assist in and facilitate access to appropriate individuals for interviewing. This visit also gave both parties the opportunity to discuss any sensitive issues, such as confidentiality, time requirements and any internal political sensitivities which could have been deemed problematic to the research.

The meeting was successful, with the SVP agreeing to support the study agreed and provide initial introductions to appropriate senior executives. The support of the SVP was useful over the period of the study not just in facilitating access but also as a sounding board, clarifying points of strategy, policy and even abbreviations used by participants during the interviews; consequently, the maintenance of a good rapport with both the SVP and his secretary was critical throughout the project.

Four initial interviews were scheduled for the week commencing 13 Feb 17 at both Director and SVP level with the goal of 'snowballing' further access, and all participants were given the opportunity to withdraw at any time from the process. An initial interview protocol was created (Appendix E), with the research questions chosen (Appendix F) which underwent a review and modification after feedback from the first four interviews, and with the research supervisor's consent to ensure the protocols validity.

The interviews took place on the manufacture's site to reduce the time participants would spend away from their primary functions; however, the initial four senior executives interviews coincided with the announcement that the company had been found guilty of serious fraud in what Sir Brian Leveson referred to as *"the most serious breaches of the criminal law in the areas of bribery and corruption (some of which implicated senior management and, on the face of it, controlling minds of the company)"*

(Leveson, 2017, p. 2). Whilst the outcome was known in January the implications were only just being discussed at the time of these initial interviews and made one participant very reluctant to discuss any challenges or tensions that could be related back to the organisations culture. That said, the initial four participants having now understood the nature of the research agreed to facilitate access to further research participants who could provide relevant insights on my research interest.

The remaining interviews were conducted from Feb-Oct 17, Table G-1 provides a summary. Where possible the interviews were conducted on the case study's manufacturing site; however, when this was impractical because of overseas location or participants work commitments, the interviews were conducted via telephone.

Interviews, where possible, were recorded on audio tape and fully transcribed by the researcher. Two participants did not wish the session to be recorded, but were nevertheless happy to engage in the research, permitting the researcher to scribe written notes as necessary. All other participants were content to be recorded and, in some cases, expressed thanks for the opportunity to not only discuss issues that have been annoying them for some time, but also for the opportunity to think in terms of more strategic issues facing their departments rather than the day-to-day 'fire fights' some had become embroiled in. Indeed, some even expressed the view that the activity had been a cathartic one!

The use of the tape recorder was not introduced immediately at start of the interview, but after the respondent had been responding for one or two minutes to 'warm up' questions about their day and general welfare. With this approach, developed in the first four interviews, the tape recorder's introduction and use in general barely raised a concern and seemed unnoticeable by the interviewees, even though they were asked specifically if they had any concerns over its use. The two interviewees who had expressed a wish not to be audio taped did so early in the interview, with the research acknowledging their concerns and rather than probe any further simply switched the recording device off and asked for permission to make written notes instead, which was deemed acceptable by the parties concerned.

Table H-1: Interview data collection summary

Date of interview	Case Reference	Interviewee	Mode	Length of Interview	Length of Employment (Yrs)
14 Feb 17	A1	Project Director	Face-to-face	20 mins	30
14 Feb 17	C2	VP	Face-to-face	1 hour	20
14 Feb 17	B3	SVP	Face-to-face	45 mins	30
14 Feb 17	B4	SVP	Face-to-face	1 hour	27
15 Feb	A5	Project Director	Face-to-face	1 hour	24
4 Apr	B6	SVP	Face-to-face	1 hour	17
4 Apr	B7	SVP	Face-to-face	1 hour	27
13 Apr	E8	Snr Mgr	Face-to-face	1 hour	16
3 May	B9	SVP	Telephone	1 hour 10 mins	14
11 May	A10	Project Director	Face-to-face	1 hour 30 mins	24
15 May	C11	VP	Face-to-face	55 Mins	18
16 May	C12	VP	Face-to-face	1-hour	7
16 May	D13	Chf Eng	Face-to-face	1-hour	32
16 May	E14	Snr Mgr	Face-to-face	1-hour	16
25 May	E15	Snr Mgr	Face-to-face	1-hour	13
1 Jun	C16	VP	Face-to-face	1-hour	8
5 Jun	E17	Snr Mgr	Telephone	1-hour 15 mins	27
6 Jun	E18	Snr Mgr	Face-to-face	1-hour 40 min	16
8 Jun	E19	Snr Mgr	Face-to-face	1-hour	19

22 Jun	E20	Snr Mgr	Face-to-face	1-hour	18
26 Jun	E21	Snr Mgr	Face-to-face	1-hour	26
26 Jun	D22	Chf Eng	Face-to-face	1-hour	17
30 Jun	E23	Snr Mgr	Face-to-face	1-hour	16
30 Jun	E24	Snr Mgr	Face-to-face	1-hour	12
18 Jul	E25	Snr Mgr	Face-to-face	1-hour	18
18 Jul	E26	Snr Mgr	Face-to-face	1-hour	20
27 Jul	B27	SVP	Face-to-face	1-hour	17
27 Jul	C28	VP	Face-to-face	1-hour 15mins	26
27 Jul	C29	VP	Face-to-face	1-hour	18
1 Aug	E30	Snr Mgr	Telephone	20 mins	17
4 Aug	B31	SVP	Telephone	30 mins	21

All interviews were scheduled in advance via email drafted by the researcher and sent directly to the respondent or to their secretary. The email contained an outline of the research, explicitly stating that participation was voluntary, and that the interviewees' input would be treated as confidential, it advised that permission would be sought to audio tape the interview for the purpose of transcribing the discourse for data analysis.

This method resulted in 27 face-to-face interviews, and four telephone interviews. The telephone interviews were primarily undertaken because of funding and accessibility issues. Thus, 31 interviews were held in total. Initially, the intention was to conduct more interviews; however, this approach was eventually revised for two reasons:

- First, some executives proved reluctant to engage with the study despite the best efforts of the key contact. Many reasons were given ranging from their lack of time, absence on business trips or simply felt they had little to contribute. Although the researcher tried to allay their concerns, it became evident that there was a reluctance in some quarters to engage with the project.
- Second, as the project interviews progressed it became clear that after about 23 interviews that the information being received back was starting to become repetitive in nature, what Sandelowski (2008) refers to as '*informational redundancy*' (ibid, p, 875). Consequently, the researcher suspected that the project was probably reaching saturation point (see 4.8.2. for clarification). Moreover, due the organisational design of the case study organisation there was only a certain number of employees who met the criteria of senior management, consequently some of the interviewees were reluctant to nominate a counterpart on the grounds that their views would create a sense of redundancy to views already expressed.

H.1 Saturation

A crucial task for any qualitative researcher is determining an appropriate sample size for the study and determining when data saturation has been reached. These two questions are frequently at the hub of much of the criticism levelled at qualitative methods in terms of its rigour (Boddy, 2016). Yet, whilst such a view is acknowledged by many scholars (Hennink, Kaiser and Marconi, 2017) few studies explain the reasons behind how sample size was chosen or the criteria for determining saturation in a study (Marshall et al., 2013).

In addressing these scholarly concerns, this researcher's first step was to clarify what was meant by 'saturation'. Glaser and Strauss (1967, p. 61) define it in terms of '*no additional data are being found whereby the sociologist can develop properties of the category. As he sees similar instances over and over again, the researcher becomes empirically confident that a category is saturated*'. Charmaz (2014, p. 213) goes further, defining saturation as the point at which ones '*categories are robust because you have found no new properties of these categories and your established properties account for patterns*

in your data... you have defined, checked, and explained relationships between categories and the range of variation within and between your categories'. Indeed the very term 'saturation' provides a misleading and 'unfortunate metaphor' (Dey, 1999, p. 257) for it does not mean a completeness of data, rather a more realistic interpretation of saturation would be to define it as the point at which a researcher stops on achieving what (Nelson, 2017) refers to as conceptual density or conceptual depth. Conceptual density in this context is 'not to reach a final limit, beyond which it is impossible to achieve new insights, but it is to reach a sufficient depth of understanding that can allow the researcher to theorise' (ibid, 2017, p. 3)

The researcher acknowledges there is a point of diminishing returns to a qualitative sample; that more data does not necessarily lead to more information. Accordingly, the sample group must be large enough to assure that if not all, then most of the sample group reflecting the unit of analysis are covered, but at the same time ensuring that the sample is not too large that the data becomes unwieldy, repetitive, or even redundant.

While there are no hard and fast rules regarding sample size in qualitative research; there are some useful pointers. Table G-2 offers a sample of guidance from scholars in respect of sample sizes for qualitative studies.

Reflecting that this research is for a PhD, it is interesting that Mason's (2010) comments on PhD research concluded that there were no hard and fast rule regarding sample sizes, rather it is the skill of the interviewer that will determine the quality of the data collected (Morse, 2008).

Considering, and despite the above-mentioned concerns, the researcher is confident that the sample numbers in this study in no way diminished the quality of the research or its findings. It is argued that the 27 face-to-face interviews, supplemented by the 4 telephone interviews, provide enough substantial, rich data, in which to investigate the case study organisation.

Table H-2. Suggested sample sizes

Author	Type of Study	Sample size recommendation
MORSE (1994, p.225)	Ethnography and Ethnoscience	30-50 interviews
BERNARD (2000, p.178)	Ethnoscience	30-60 interviews
CRESWELL (1998, p.64)	Grounded theory	20-30 interviews
MORSE (1994, p.225)	Grounded theory	30-50 interviews
CRESWELL (1998, p.64)	Phenomenology	5-25 interviews
MORSE (1994, p.225)	Phenomenology	At least six interviews
BERTAUX (1981, p.35)	All qualitative research	Minimum of 15 interviews
CHARMAZ (2006, p.114)	Qualitative research	25 interviews are adequate
RITCHIE et al. (2003, p.84)	Qualitative research	Samples tend to "lie under 50"
GREEN and THOROGOOD (2009 [2004], p.120)	Qualitative research	"the experience of most qualitative researchers (emphasis added) is that in interview studies little that is 'new' comes out of transcripts after you have interviewed 20 or so people".
ATRAN, MEDIN and ROSS (2005, p.753)	Qualitative research	"as few as 10 participants were needed to reliably establish a consensus".
MASON (2010, p. 13)	PhD research	The most common sample sizes were 20 and 30

(Adapted from Mason, 2010)

Appendix I - Ethical Considerations and Data Sources

I.1 Informed Consent

Informed consent involves informing the research participants about the study's overall purpose and main features of the design, as well as communicating any risks and potential benefits of participation. It further involves obtaining voluntary participation of the people involved and informing them of the right of withdrawal at any time. Accordingly, the researcher asked participants to sign, or in the case of telephone interviews to indicate their recorded agreement. A copy of the consent form is at Appendix F.

Moreover, all participants were presented with an information sheet outlining the purpose of the research prior to interview and then asked for any questions or concerns prior to the commencement of the interview.

All participants agreed with the consent form, including that data would be accessible to other researchers on condition of the maintenance of confidentiality. All participants indicated that they would participate on the condition that they had anonymity in this thesis and any subsequent research outputs based upon this work.

I.2 Confidentiality

Confidentiality implies that any private data identifying participants will not be disclosed, and that where information may be recognisable to others, the participants should agree to the release of this identifiable information (Kvale and Brinkman, 2009). For this study, the names of all participants were anonymised (Appendix G, Section: Establishing Rapport refers) as was the name of the case study organisation.

I.3 Reducing harmful consequences

A research must always consider the consequences of conducting a qualitative study to ensure that any potential harm to the participants is minimised and that the overall benefits of the research should

outweigh any potential harm. This means that the balance between benefits and risks should be considered.

The goal from the beginning of this research was to gain a holistic understanding of the challenges facing an established servitized manufacturing company through the eyes of its senior management and to explore and identify through their discourse any inherent tensions that may be supporting such challenges. Whilst the offer was made to all participants that the study's findings could be shared with them. Most of the participants expressed little interest, although the individual who sponsored my access to the organisation did, although he has now moved from his original appointment, but arrangements will be made to share the findings with him upon submission of this thesis, if he is still interested

1.4 The role of the researcher

From the outset the role of the researcher was seen as a critical component in determining the quality of knowledge obtained. This process of reflexivity concerns being able to be reflective about one's role in the research process, the relationship one has with research context and all the participants, as well as the final thesis that one writes. Thus, the integrity of the researcher becomes paramount in interviewing as the researcher is the mechanism for obtaining knowledge.

Potential influences on the independence of the researcher were identified at the outset. The researcher had no prior knowledge of the case study organisation, nor indeed with any of the participants either socially, or in terms of a specific role or status they may hold through any professional interaction. None of the participants sought to apply any limitations or restrictions on the study, other than the request for anonymity. Moreover, the researcher sought to ensure throughout the data gathering stages that personal integrity was maintained by ensuring at all stages transparency of the research purpose was maintained using effective open communication with participants on the study's aims and objectives, and by honouring any commitments made to participants.

I.5 Data Sources

Data relating to a case may come from a variety of sources including ethnographic studies, diaries, interviews, archival data, direct observational research conducted either openly or covertly, and physical artefacts (Yin, 2014). An attractive approach for an ethnographic study consists of a longitudinal study in which the researcher immerses into the organisation of study. However, as discussed previously in explaining the rationale for a case study, such a methodology was ruled out early in the design process due to the limited timescale available to conduct the research, as well as site and participant access issues.

Diaries, another means of collecting data, were initially discussed with the researcher's supervision team as a method that could be used to capture participants' perceptions without the need for the researcher being embedded in the company for a period. However, their use was also dismissed as unrealistic for two purposes. First, like any empirical research gaining access to a suitable organisation, and its personnel is critical. In this study, initial access to senior management was difficult and required what Buchanan, Boddy and McCalman (1988, p. 53) refer to as an '*opportunistic approach*' with access initially gained utilising LinkedIn and then a '*snowballing*' approach (Omona, 2013, p. 180). Second, it became clear in initial discussion both with supervisors and a variety of 'gatekeepers' who controlled access to the senior executives that it was unrealistic to expect such senior management to have the time or inclination to capture their thoughts in writing or on audio tape, over several months, for a doctoral research project.

Appendix J - Time in Organisation Research

This Appendix provides a synopsis of the thinking on time in organisational research. It is not meant as full literature review merely to provide a deeper understanding to some of the observations and comments regarding temporality within this thesis.

J.1 Introduction

Time and organisations go hand in hand. Management has long had a fascination with time since with conceptions of it finding its way into management thinking for over century, arguably from the eponymous Taylorism studies of time and motion at the beginning of the century (Taylor, 1914). The upshot has been that time has been a perennial interest to scholars and management interested in how it shapes and controls the environment in which we are embedded (Brunelle, 2017).

Slawinski and Bansal (2017) observe that two main assumptions have arisen over research on time; namely how organisational time is presented and second that time is frequently expressed from a western perspective. The first condition relates to the fact that organisational time is frequently defined in terms of contradictory and opposing elements, for example, long-term versus short-term or objective and subjective and event time versus clock time where one trades one off against the other. The second assumption relates to the perspective of time being objective 'independent of man' (Clark, 1990, p. 142) and aligned with the Newtonian concept of time being absolute, linear, unitary, mechanical and quantitative (Orlikowski and Yates, 2002; Reinecke et al., 2015). Such an orientation however is contested as conceptualises time as subjective, instilled through our norms, beliefs and customs social constructed individually and collectively (Orlikowski and Yates, 2002).

This objective-subjective dichotomy is frequently referred in literature as the contrast between Western hegemony of 'clock time' and Eastern perspective of 'event time'. This temporal tension is reviewed below.

J.2 Objective versus Subjective

The objective-subjective dichotomy is presented by Slawinski and Bansal (2017) as a temporal dimension situated under the thematic heading of '*The ontology of Time*' (ibid, p. 375). The objective-subjective distinction is sometime referred to as *Chronos* and *Kairos*. *Chronos* is time measured by a chronometer not by purpose but by action (Jaques, 1982) and suggests that time is based on some external metric, such as an atomic clock or internet time (Mosakowski and Earley, 2000). Such a view sees time as something that is observable and real. *Kairos* on the other hand refers to '*the human and living time of intentions and goals...the time not of measurement but of human activity, of opportunity*' (ibid, pp.14-15). This perspective sees subjective time as something that is varied, that different people can interpret it differently. For example, a person could dwell on the past, while someone else may have a future orientation. However, researchers who focus on one side or the other miss understanding how temporal structures emerge and are in fact embedded in social practices across groups and historical periods (Orlikowski and Yates, 2002).

J.3 Clock time versus Event time

Slawinski and Bansal (2017) categorise this dichotomy under the temporal dimension of '*Temporal Perspective*' (ibid, pp. 376-377) in which they see this perspective as a preference for either clock time or event time, a perspective linked to the objective and subjective dichotomy (Orlikowski and Yates, 2002). Bluedorn and Denhardt (1988) highlight that clock time has dominated Western thinking on time since the Industrial Revolution codified under terms such as commodification, work discipline and machine time (Adam, 1994; Orlikowski and Yates, 2002). Clock time is seen as linear, it advances in a single direction, it is atomistic and can be broken into measurable units reflecting E. P. Thompson's observation that '*Time is now currency: it is not passed but spent*' (Thompson, 1967). Clock time can be seen in organisational working rhythms and working practices, from the timing of financial reports or appraisals, budgetary cycles to newsletters and are strong guiding principles for organising and shaping how an organisation frames problems and decides on solutions (Slawinski and Bansal, 2017). However, clock time has been criticised for a short-termism approach by management (Lavery, 1996; Marginson and McAulay, 2008; Slawinski and Bansal, 2015).

In contrast to clock time, event time is associated with Eastern practices (Chen and Miller, 2010) and rather than time being marked by clocks, is marked by events. Time is therefore seen as organic, and cyclical (Reinecke et al., 2015); it is process orientated rather than associated with deadlines. Unlike clock time, event time is cyclical as events are seen as recursive over time, its focus is continuous emphasising the sequential nature of events as opposed to the time in between.

J.4 Past versus Present versus Future

This temporal dimension is referred to 'Temporal Focus' (Slawinski and Bansal, 2017, pp. 377-378). The perspective of past, present or future reflects a firm's temporal focus. While a firm can have more than one temporal focus, research shows that most organisations tend to have one dominant focus.

Organisations that focus on the past over the present are said to favour tradition over innovation (March, 2008; Mosakowski and Earley, 2000), whereas organisations that favour the present over the future rank efficiency over learning, and exploitation over exploration (Slawinski and Bansal, 2017).

At the individual level, temporal focus concentrates on cognitive bias that shape behaviours such as decision making and how individuals draw up plans for activities (Zimbardo and Boyd, 1999). In essence, individuals' time perspectives can be said to be situated in the past, present, or future. Personnel with a present focus generally tend not to plan, are seen as impulsive and less goal orientated. Individuals with a future focus often see what the future could be and see their current actions as bringing them closer to realising their future desire. Accordingly, they tend to be more goal orientated and more likely to delay rewards (Zimbardo and Boyd, 1999). Finally, individuals with a past perspective tend to rely on past experiences to shape their decision making and are seen as more risk-averse than those with a future disposition (ibid, 1999). Whether a temporal focus is a stable trait or one subject to context is an ongoing academic debate so the veracity to which *'the temporal focus of individuals can be generalised across contexts is not clear'* (Slawinski and Bansal, 2017, p. 378).

J.5 Short versus Long

Temporal depth (ibid, p. 378) is the temporal dimension that capture the dichotomy of short verse long time horizons, and is frequently associated with time relevant to decision-making (Bluedorn and Jaussi, 2008). Bluedorn (2002) differentiated between temporal depth and temporal focus (ibid, p. 141-142) commenting that 'depth' related to how far in the past and future one looked, with 'focus' presented as how much importance one associated with past, present, and future. Consequently, the dichotomy of short-term or long-term relates to temporal depth.

Scholars such as Lavery *et al* (1996) have presented this dimension in organisations as a trade-off, as an intertemporal choice with organisations criticised, especially in the West, for favouring a short-term horizon in planning at the expense of long-term goals.

J.6 Fast versus Slow

Temporal speed tends to be concerned with how quickly organisations make decisions. Where faster decision-making is often seen as better (Eisenhardt, 1989), particularly in high-velocity and dynamic environment. However, others have criticised this view arguing that an emphasis on speed can be damaging, linked to poor quality in decision-making (Slawinski and Bansal, 2017). (Perlow, Okhuysen and Repenning, 2002) identified in a study what they referred to as a 'speed trap' in which the encouragement of a faster pace, created more pressure for speed, increased pressure on staff and poor outcomes. Speed and decision quality were seen to be at the opposite ends of the spectrum, and counterfactual to previous research (ibid, 2002) arguing that speed many not be the best choice in all situations when it comes to decision-making as it can lead to poor choices.

J.7 Summary

Research on organisational time has increased significantly over the last two decades. However, it is arguable that much of this research in organisations has taken a dichotomous approach of 'either/or' view of time. Such a perspective is path-dependent to the hegemonic focus in the West on clock time and thus discourages alternative perspectives. However, paradox theory offers an alternative to an either/or' approach by proffering an 'and/both' perspective offers a whole new world of possibilities

such as exploring the interrelatedness of BOTH short- AND Long-term strategic goals reducing managements' focus on short-termism.

Moreover, the dominance of clock time has been shown to have detrimental effects on organisations (Slawinski and Bansal, 2017, Orlikowski and Yates, 2002) with Reinecke and Ansari (2015) commenting that clock time does restricts an individual or organisations to achieving sustainable and developmental goals. In terms of servitization research the need for organisations to simultaneously meet project delivery times in terms of product development and meet changing demand requirements from extant customers in terms of services delivery shows that multiple time perspectives operate with a single organisation. A paradox lens can move research away from clock time and other dominant views of time and instead focus on the interplay between the duality of the two poles as well as their relationship with other temporal tensions. Thus, a paradox approach to temporality, looking at contradictory, interrelated and persistent tensions offers opportunities to take a fresh look at how temporal dimensions within organisations shape experiences, cultures and actions.