CRANFIELD UNIVERSITY

Tariq Alsafi

A Framework for Business Cloud Services (BCSs) in SMEs

SCHOOL OF AEROSPACE, TRANSPORT AND MANUFACTURING (SATM)

Doctor of Philosophy Thesis
Academic Year: 2018 - 2022

Supervisor: Dr Ip-Shing Fan
Associate Supervisor: Dr McLaughlin Patrick

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ABSTRACT

The Saudi economy is changing rapidly to move from depending on energy to one with a wide range of indigenous businesses. Successful Small and Medium Enterprises (SMEs) are important in this economic transformation. Many Saudi Arabia SMEs are adopting Cloud Based Enterprise IT Services as the option to grow and sustain due to its cost and agility. However, they are often confused by the large international Cloud Services suppliers and not all SME reap the right business value from their Cloud Services investments.

This research aims to create an approach to assist Saudi SMEs based on a strong research understanding. A novel framework is created that takes into account of the different functions of different Business Cloud Services, the different business requirements of each SME and their existing capabilities and readiness. Rather than treating all Cloud Services as the same, the researcher differentiates into three types: Digitalisation, Packaged and Enterprise. The research relates the Technological Resources, Organisation Capabilities, Organisational Requirements and Business Benefits for each of the Cloud Service types and then integrate them into one cohesive framework.

This research adopted a pragmatic paradigm. The conceptual framework is developed through literature, contextualised, and improved qualitatively through interviews with 17 experts and 54 practitioners. The model was quantitatively examined with 395 questionnaires. The framework was developed into a readiness assessment tool and validated with three Saudi SMEs, who value the approach as beneficial business advice.

The framework contributes to the improved structural knowledge of Cloud Services adoption. The constructs add contextualised factors to understand the business considerations relevant to Saudi SMEs.

Keywords:

Business Cloud Services, SMEs, Saudi Arabia, Capabilities, Transformation Requirements

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Chapter 1 : Introduction

1.1 Introduction

This chapter introduces the research context and identifies its professional and academic motivations. The research question, aim and objectives will be determined according to the academic motivations described. Finally, the thesis structure will be presented at the end of the chapter to explain how the research objectives will be met.

1.2 Research Background

Traditionally, organisations purchased software applications to manage their business activities; these were on-premises applications. Now, the trend has changed; instead of buying applications or hardware to perform business functions, organisations choose to rent applications and hardware. This provides a roughly zero starting cost for technological infrastructure and allows any organisation that has access to the Internet to pay a monthly subscription to access their preferred services[1]. Consequently, cloud computing services are booming in all sectors due to their imminent benefits, which offer flexibility, scalability and cost benefits relative to other on-premises applications. For instance, Accenture (2020) found the total cost of cloud applications ownership has reduced by 40% after moving to the public cloud.

Professional publications have documented the rapid spread of cloud computing affordances in all sectors. For instance, SIM IT Issues and Trends Study (2017) found that over 30% of IT services in the U.S. were cloud-based and that companies who have moved to the cloud have reduced their IT budgets and paid significantly less than their peers. Currently, according to the Statistica report, in 2021, half of all global corporate data is stored in the public cloud. The public cloud is expected to evolve as the industry itself and its interactions with enterprises become more prevalent.

According to recent data, the public cloud market reached $178 billion in 2018 (Xiao & Hedman, 2019). According to predictions from Gartner[2] (2021), the global spend on cloud services is predicted to be over $482 billion by 2022, up from $313 billion in 2020. The same

[1] **https://www.accenture.com/nl-en/insights/strategy/green-behind-cloud**
[2] https://www.gartner.com/en/newsroom/press-releases/2021-04-21-gartner-forecasts-worldwide-public-cloud-end-user-spending-to-grow-23-percent-in-2021

report predicts that Public Cloud End-User Spending will have grown 23% in 2021 alone, and that half of global organisations will adopt an all-cloud strategy by 2022. The market is expected to expand to reach a worth of $1.25 trillion by 2028[3].

From a business perspective, there are challenges to navigate, as although subscriptions are cheap, in reality, realising value from them is not guaranteed. In a study by Flexera (2021)[4] , half of the businesses invested more than $1 million to get the best use of cloud services subscriptions upon implementation, and yet 30% of budgets were found to have been wasted because they had not effectively prioritised their investments to ensure their capacity to assimilate the services into their daily routines. Therefore, dedicated research is necessary to define the requirements for the effective assimilation of cloud services.

1.3 Research Context

Saudi Arabia launched a strategic framework in 2016 (Vision 2030) with the aim of reducing the country's dependency on oil. It sets out strategies to diversify the economy and enhance public sectors like health, education, tourism, infrastructure, and recreation. The vision aims to develop and promote non-oil sectors like tourism, financial, services, retail, and construction, among others, so that the country can achieve economic growth and development (Nurunnabi, 2017).

The national program seeks to transform Saudi Arabia into an ambitious nation by developing effective e-government, Small to Medium Enterprises (SMEs) development, and non-oil revenues (Nurunnabi, 2017). The SMEs sector has been identified by the Saudi government as an intrinsic part of the strategy to implement Vision 2030. SMEs are defined as firms that have 249 or fewer employees and less than SAR 200 million per year in revenue (Tripathi, 2019). At present, the country's SME sector only contributes to 22% of GDP, while their contribution towards exports is just 5% (Tripathi, 2019). In total, 1.97 million SMEs are operating in various sectors of the economy throughout the country (Tripathi, 2019). Despite the potential of SMEs, they remain inefficient and ineffective in terms of their business strategy and operations approaches. The majority of SMEs still operate according to traditional business models and mindsets (Batwa & Alamoudi, 2019).

[3] https://finance.yahoo.com/news/cloud-computing-market-size-share-164200734.html
[4] Cloud Computing Trends: 2021 State of the Cloud Report | Flexera Blog (fxb-buyer.com)

Saudi Arabia is one of the countries in the world that is moving fast in terms of cloud adoption, empowered by full government support for the 'cloudisation' of all IT services in the country (both the public and private sectors). Currently, the government has a policy of "The Cloud First" to ensure the prioritisation of the cloud over traditional software when making decisions. Therefore, the pace of adoption of cloud is significantly high (35%), and over the period from 2021 to 2030, it is expected to rise to $10.5 billion. Large corporations have access to specialist consultants and resources for successful implementation, while SMEs are struggling to achieve success or satisfactory results from their investments in the cloud. In 2020, Khayer et al. documented that fewer than 30% of SMEs achieved their business goals or attained strategic success from investment in cloud services. It is essential to understand the reasons for this low rate of success; for example, lack of resources could be a reason but is unlikely to be the only reason.

Cloud computing has been set by Saudi policy makers as a key priority for empowering SMEs and transforming their business models. Thus, this research will feed into Saudi policy making as a way to support SMEs in their successful utilisation of cloud services' potential.

1.4 Research Academic Motivation

Researchers have made multiple attempts to understand cloud computing success in SMEs in general (Zhang et al., 2022) although not in the Saudi SME context. Different theories have been proposed to explain the variable levels of success (Meredith & Zwikael, 2020; Sanchez et al., 2017). These theories can be grouped as either psychological or organisational (Wang & Lai, 2014). The psychological theories include the Technology Acceptance Model focused on the users' perception of ease of use, usefulness, subjective norms and attitude as key predictors of intention to use cloud computing (Almahamid, 2019; Davis, 1989; Sharma et al., 2016). Other psychological theories, such as the IS business success model, focus on the perception of quality of information, quality of the service, and perceived benefits, as predictors of use of cloud computing (Delone & McLean, 1992; Tsai, 2021). These psychological theories operationalise success as use only or intention to use and focus on users' perceptions (Donovan et al., 2018; Kim et al., 2017). Although there is value in explaining variations in intention to use at the individual level, doing so cannot explain the realisation of benefits from cloud services and generally do not differentiate between the different cloud applications, treating all cloud applications as one (Shetty & Panda, 2021).

The first criticism made here is that the previous literature addresses the concept of the "cloud" vaguely. Certainly, cloud services in the SMEs environment can be defined as supporting simple office tasks (i.e. such as updating email systems) to fully integrative enterprise systems (i.e. cloud ERP systems) or even to become functional cloud applications (i.e. Customer Relationship Management System or Point of Sale system) (Pfister & Lehmann, 2021). Previous researchers have either studied one application (Hentschel et al., 2019; Karunagaran et al., 2019; Vu et al., 2020) or used the word cloud to reflect them all indiscriminately (Pfister & Lehmann, 2021). None of the literature has taxonomized existing applications in a meaningful business context by studying and comparing the levels of success for each (Wulf et al., 2021).

The second criticism in the inability to differentiate the variation in benefits from the concept of benefit as reflecting changes in business practices in order to deliver Key Performance Indicators (KPIs) so that benefits can be realised (Ward & Daniel, 2013); i.e. the mere use of cloud services without changing business practices will not improve organisational performance (Breese et al., 2020). Thus, there is a need to have a comprehensive view to explain the variation in the success of implementation, not only based on intention to use, but also based on the ability of the organisation to absorb the technology and transform its business routines (Meredith & Zwikael, 2020; Musawir et al., 2017).

It is a necessity to have a macro perspective to explain variations in success across organisations (Volkoff & Strong, 2013). Research, when it adopts a macro perspective, can be classified into institutional perspective (e.g. institutional pressures), and internal organisational perspective (Adjei et al., 2021). The institutional perspective is more outward focused, and argue that mimetic, normative, and coercive pressures are the key to adopting cloud services, although they do not tell us how organisations can improve their practices to fully assimilate the cloud services (Alsharari, 2021). Thus, the focus of this research is on the internal organisational perspective.

Research at this level underlines the focus on top management commitments (Skafi et al., 2020; Alhammadi et al., 2015), availability of resources (Helfat, 2017), and organisational capabilities (which can be hard to determine) (Senarathna et al., 2018; Troise et al., 2022). The main challenge of considering individual factors, such as top management commitment (Al-Ammary & Saleh, 2021), despite their importance, is that the interaction between them and the business-as-usual environment reflects the main predictor of resistance to change and

assimilation of technology (Alkhater et al., 2018). This research found a gap in the literature in reference to the role of an organisation's capability to assimilate cloud services in such a way that it can realise the required benefits.

The reason for adopting organisational capabilities is based on (Melville et al., 2004; Schryen, 2012) a framework that considers business value to proceed from investment in technology, and not only from IT resources (i.e. the technology itself, and IT department skills, knowledge and competences). Additionally, and most importantly, are complementary organisational resources (i.e. employees' and organisations' capacity to change, which is referred to as organisational capability to adopt cloud services in this research). Since without changes in business practices, no benefits will be recouped (Badewi et al., 2018; Felipe et al., 2020). However, there are limited papers spotlighting the role of organisational capabilities to explain variations in the success of the adoption of cloud services by SMEs (El-Haddadeh, 2020; Troise et al., 2022). Moreover, none of them has developed a framework to consider differences in the nature of cloud services as a way to establish theoretical connections between different organisational capabilities and the various types of cloud computing services.

This research argues the importance of having organisational capabilities to change, sometimes called organisational readiness (Al-Jabri & Alabdulhadi, 2016). However, without developing appropriate extra resources and capabilities to assimilate the technology, it will be challenging for any organisation to utilise the technology in a business-as-usual environment. For example, organisational capacity to define new technologies in the market (acquisition capability) determines the capability to change (Zheng et al., 2011), which is not required to be developed specifically for adopting the cloud in the organisation routines (Annarelli et al., 2021). At the same time, employees' capacity to learn about cloud service technology and integrate it into business as usual are the chief capabilities required for successful transformation, called in this research "transformation requirements". In other words, the transformation requirement differs from organisational capabilities because it is case-specific (i.e. cloud service), determining the actions and resources required for successful assimilation of the application. Whereas organisational capabilities are the current practices that can improve organisational readiness to accept cloud services. This conceptualisation has been adopted in the change management literature (Wang et al., 2019) but not in reference to cloud services (Chee et al., 2011; Kehrer & Blochinger, 2018). There is limited research conducted using this theoretical perspective to explain the success of the adoption of cloud services. Virtually none of the research has used

this theoretical perspective to define the transformation requirements and organisational capabilities that support successful assimilation of the different cloud services in the business environment of SMEs in an emergent economy like Saudi Arabia.

1.5 Research Question, Aim and Objectives

Research Question: Why do SMEs realise different levels of success in the cloud computing environment?

The aim of the research is to develop a framework to define transformation requirements and organisational capabilities required for successful implementation of different types of Business Cloud Services (BCSs). This framework can be operationalised into a readiness matrix to assess and assist SMEs to achieve success when implementing different types of cloud services.

To achieve this aim, the following research objectives are set.

1- To taxonomize Business Cloud Services (BCSs) in the SMEs environment
2- To define the success for each of the groups of cloud services
3- To define organisational capabilities required for successful assimilation of each group of services
4- To map different transformation requirements for assimilating different groups of cloud services

1.6 Thesis Structure

To answer this research question and fulfil the research aim and objectives, this thesis, as visualised in Figure 1-1, will be structured as follows. The next chapter (Chapter 2) will review and critique the relevant literature on cloud computing in the SMEs environment. It will introduce different theories explaining the predictors of success and explain why this research opted for organisational capabilities and transformation requirements as the theoretical lenses to explain the variable success rates. Chapter 2 concludes by identifying the knowledge gap motivating this research and establishing the analytic framework as the basis for the research methodology. Chapter 3 is dedicated to setting the ontological, epistemological and axiological stances for this pragmatic paradigm research. Chapter 3 also details the methodological approach taken in this research in terms of integrating quantitative and qualitative techniques in a single study to fulfil the research aim and objectives.

As the research breaks down cloud applications into three categories, each category is fully investigated in its chapter (Chapters 4, 5, and 6). Each of the chapters is broken down into three sections: developing (literature), improving (interviews), and testing (questionnaire). In chapter 7, all the models are integrated into the research framework, tool development, and validation (case study). Chapter 8 discusses the work and presents the overall critical findings of this research. Contributions to the literature are discussed, and policy recommendations are provided. This chapter concludes by setting out the limitations of this study and recommendations pertaining to the potential continuation of the research.

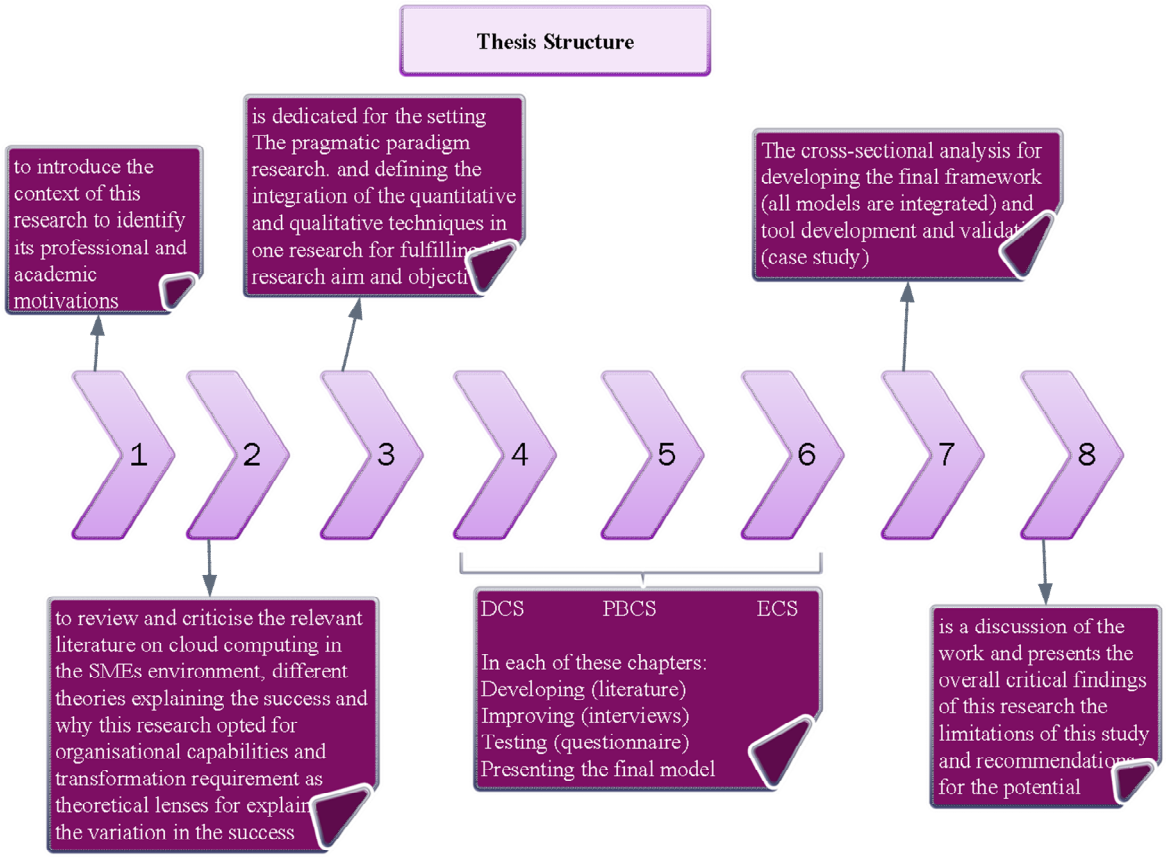

Figure 1-1: Thesis Structure

Chapter 2 : Literature Review

2.1 Introduction

This chapter aims to define the research concepts, spotlight weaknesses in the academic literature and set out the theoretical perspective for understanding the success of cloud computing in the SMEs context. To fulfil these aims, the chapter is structured as follows. First, Section 2.2. defines the cloud computing concept to highlight it is not one set of applications; rather, the cloud computing concept includes diverse types of applications. Thus, Section 2.2. consists of five sub-sections. Section 2.2.1 goes into depth to define different taxonomies and evaluate the relevance to this research and reach an outcome for a need to have a new taxonomy. Section 2.2.2 designed to highlight the current literature on cloud computing in SMEs, to investigate which applications are fitted more with SMEs to narrow down the research focus on relevant applications. Section 2.2.3 is mainly for the benefits, which paves the way for the definition of the benefits in the following subsection. Section 2.2.4. aims to highlight the definition of success and how this definition may differ based on the theoretical perspective and the type of application. Finally, Section 2.2.5. explores the inconsistencies in the literature in more depth, defining benefits that call for a new taxonomy of cloud applications relevant to the SMEs context in Saudi Arabia, which is a knowledge gap that requires a closer look to fulfil.

Section 2.3. will examine the definition of success to investigate the different theories explaining the variability of success, as framed under the IT business value stream. There are two main theoretical perspectives to explain this. These are business value (Section 2.3.1) and the Resource-Based View (Section 2.3.2). Based on a critical analysis of the two theoretical positions, the theoretical perspective was developed and operationalised as part of the research analytic framework in Section 2.4. This chapter ends with a summary section to highlight key weaknesses in the literature and define the knowledge gaps, as well as a proposed theoretical perspective to guide the methodology in the next chapter to fill in these gaps.

2.2 Cloud Computing

The term “Cloud Computing” was coined by Eric Schmidt (Zissis & Lekkas, 2012) to describe the mechanism used to transform the relationship between IT service production and consumption, i.e. the shift from selling to renting technologies and solutions. Cloud computing facilitates the servitisation of IT solutions (Ratten et al., 2015). The cloud computing model is

based on renting IT services rather than “selling” them to the client (Sunyaev, 2020). The validity of this concept is based on the accessibility of the Internet, i.e. instead of buying a software application, storage or processor to be located at an organisation’s premises, it involves renting the use of software applications, storage or access to configurable computing resources located into the cloud (i.e. online). It also links the client with the service provider in a long-term contract with relatively high switching costs, because the data, information, and configurations of technologies are established over time between them (Varghese et al., 2020).

Cloud computing has revolutionised the IT market because it affords access to SMEs, offering access to sophisticated technologies at minimum cost, without the need for hiring expensive IT department staff (Mell & Grance, 2011). A cloud computing model, versus an on-premises one, has two main principles: virtualisation and grid (Marston et al., 2011). Virtualisation indicates that end-users can interact with the system directly without the need to engage information technology specialists or buy technology on the premises. Grid computing allows decentralisation and distribution of computing power and resources over the cloud (the Internet). In this way, storage is hired from a service provider, which offers accessible storage anywhere, anytime and without a need to host or maintain physical storage devices.

The following sections aim to review the different taxonomies offered for cloud services in the business arena, contextualising cloud computing in the SME environment (Section 2.2.2). Based on this contextualisation, benefits (2.2.3) and success (2.2.4) as defined in the literature are reviewed. Finally, the knowledge gap is contextualised based on the Saudi context (2.2.5).

2.2.1 Cloud computing Taxonomy

Cloud computing services are mainly taxonomized into Software as Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a service (IaaS) (Mell & Grance, 2011). Access to IaaS is provided on the basis of a periodical subscription to IT foundation services such as storage, backup, and processing power (Zhang & Ravishankar, 2019). IaaS offers “processing, storage, networks, and other fundamental computing resources” (Mell & Grance, 2011, p. 3). Meanwhile, SaaS represents a periodical subscription to enhance software functionality and the storage capacity provided by service providers (Lee et al., 2013). The charge is based on a number of functionalities, a number of users, or both (Vaquero et al., 2008). The last is PaaS, for which a subscription is paid to application developers to host their applications on the cloud services. Wulf et al., 2021 verify that the roles and responsibilities associated with adoption

differ between SaaS (IT department as guideline provider) and IaaS/PaaS (IT department as a technology enabler).

Due to the size of SMEs and their financial and technical capacity, PaaS will not be adopted because it is mainly intended for developers. IaaS is also not typically used by SMEs because it is used in cases where significant computing power is required, which is not the case for day-to-day SMEs. Thus, this research will focus on SaaS, as SMEs' budget is limited to buying on-premises applications, and it is scalable and flexible, which aligns with the nature of SMEs (Roffia & Mola, 2022; Xiao et al., 2020). Besides, SaaS empowers SMEs to have access to business applications that include general business, SaaS such as anti-virus software, e-mail, office package to business-oriented SaaS such as accounting, Customer Relationship Management (CRM), Enterprise Resource Planning (ERP) (Cegielski et al., 2012; Lin & Chen, 2012; Low et al., 2011; Park & Ryoo, 2013; Stantchev et al., 2014).

This range of SaaS applications need further taxonomy and investigation as the challenges, benefits, and requirements vary completely between them. For instance, the requirements for successful emailing or office application systems are significantly different from those that deliver a successful ERP cloud system (Gupta et al., 2013). The differences between the applications require a further process of delineation of the applications' ontology to improve the understanding towards the success of each possible category of business cloud applications (Azam, 2019). Thus, this research proposes different groups of cloud computing services for SMEs: Digitalisation of the Cloud Services (DCS), Packaged Business Cloud Services (PBCS) and Enterprise Cloud Services (ECS). DCS are more focused on office applications and highly unstructured data such as MS Office and Drop box (Low et al., 2011). PBCS are those standards off the shelf applications that serves one function such as Accounting Software packages or Customer Relationship packages (Cegielski et al., 2012). The last which is the ECS that integrates different applications and business processes into one software application such as cloud ERP systems (Stantchev et al., 2014). The following diagram in Figure 2-1 shows that the relevant number of SMEs applying ECS are much lower than those applying the PBCS (Roffia & Mola, 2022) while DCS are the most common (Koelsch, 2016). The main reason here is that the DCS is the cheapest and affordable to all organisations while ECS are expensive and not affordable to most of SMEs (Turulja & Bajgoric, 2018). PBCS can be a good solution for SMEs as the cloud services are mainly for certain functions, with relatively affordable price, but manual work still required (Gutierrez et al., 2015).

The next section will contextualise the direction of the research towards the SMEs, so the definition of success of BCSs can be fitting the context. Hereafter, based on this definition, the theoretical perspectives are settled in the following section to propose different approaches and theories for explaining possible variations in the success of each category of business cloud applications.

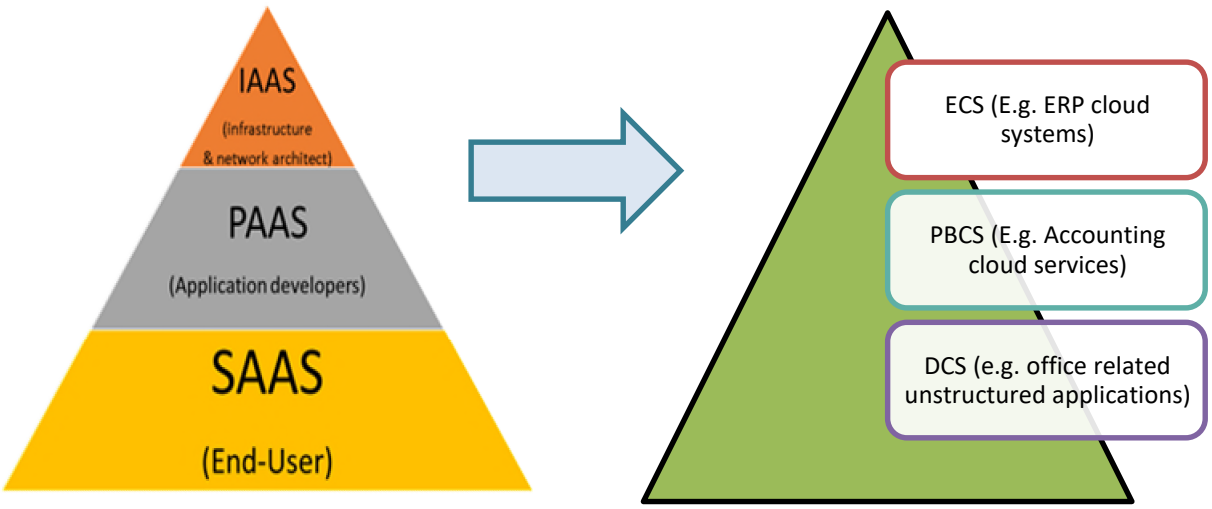

Figure 2-1: Traditional and new Taxonomy of Cloud Applications

2.2.2 Cloud computing adoption in SMEs

SMEs are significantly different from corporate bodies, which makes the adoption of the applications different. They are characterised by a lack of access to resources and flexibility. SMEs have limited access to financial, technical, and business consultancy resources. Financial limitations indicate that SMEs have limited affordability in terms of buying software applications, which makes cloud solutions ideal for them (Wright et al., 2007). The cost of purchasing an on-premises ERP system ranged from a minimum of around 50,000 to 2,000,000 GBP in 2021, while the cost for subscribing to a cloud service per user ranges from 5GBP to 20 GBP per month; thus, the cloud is significantly cheaper and provides a more affordable model for SMEs (Xiao & Hedman, 2019).

Moreover, as noted above, the on-premises applications require a significant storage capacity and management, which could cost around 5,000 per month for a UK firm or around 3,000 per month for a Saudi Firm. However, such costs are virtually non-existent when working with cloud services (Chou, 2015). All of these differences in cost mean SMEs only have one reasonable option available to them, which is a cloud application. Although financial is a motivator for adopting cloud applications for SMEs, the negative is the affordability in hiring business consultants to assist with selecting appropriate applications or when transitioning

from a manual to a digitalised business (Marston et al., 2011). This could increase the risk of failure for SMEs. Thus, Usman et al. (2019), in their study of cloud-based ERP adoption in Nigerian firms, observed that financial restrictions are translated into limited technical, operational, and adaptability capabilities that hinder the SME from successfully adopting these applications.

They are also flexible, indicating unstructured work structure and unstructured processes and functions (Jain & Hazra, 2019). Cloud applications, in general, are flexible in nature (Ali et al., 2021), which is more suitable for SMEs (Carcary et al., 2015). Unlike the corporate setting in which job descriptions and specifications are written and mapped, SMEs' flexibility suggests that one person can complete different tasks and functions based on need, and two can complete the same task-based on availability (Jain & Hazra, 2019). This flexibility is easier with unstructured applications such as Excel or Word. Business applications like ERP systems are highly structured (Badewi et al., 2020). The possibility of adapting the business process is high in SMEs, which indicates a negative perception and attitude towards the ERP as a restrictive application (Trott & Hoecht, 2004).

The current literature does not afford a unified framework for cloud-ERP deployment in SMEs. In other words, there is no discussion of the various levels of complexity necessary for implementing different types of cloud systems.

2.2.3 Business Cloud benefits

The business benefits to SMEs of cloud applications are numerous. These can be differentiated as either organisational or technical.

From an organisational perspective, organisational benefits take the form of improved performance linked to changes in business practices (Ward & Daniel, 2013). Cloud computing conveys multiple organisational benefits, as captured by the literature (Pfister & Lehmann, 2021). It has been noted that it offers strategic and operational level benefits to SMEs, such as increasing annual revenue and minimising operational costs (Khayer et al., 2021). For instance, due to the cloud nature, employees can access data from anywhere globally, as long as Internet is available (Ma et al., 2021). Another researcher in China found that cloud computing helped SMEs manage the workforce more efficiently and improve communication across individuals and departments due to their ability to share documents and files in a synchronised way online (Changchit & Chuchuen, 2016).

This technical feature improved organisational flexibility (Scheuer et al., 2016; Garrison et al., 2015). Liu et al. (2016) found that cloud adoption affected organisational flexibility, which in turn affects the firm performance. Similarly, Ting et al. (2016) attributed cloud technical features to organisational benefits in terms of the organisation's scalability, agility, efficiency, flexibility and information security for SMEs. In comprehensive studies by Albelaihi & Khan (2020) and Ali et al. (2021), the perceived benefits of cloud computing for SMEs are operational efficiency, speeding up data communication across departments, improved data accuracy, organisation flexibility, and a reduction in staff numbers. The quality of data in terms of accessibility, timelines, and accuracy due to the existence of cloud applications has been found by Saudi SMEs firms to improve the quality measures of organisation performance (Albelaihi & Khan, 2020). Following the same logic, Narwane et al. (2020) surveyed 290 people from 96 SMEs in India and found that cloud computing improves organisational trust due to its effects on data flow across and inside departments and organisations. Hosseini et al. (2019) found that cloud computing in SMEs in Iran and Turkey (a study on 227 CEOs) improved the organisation's ability to enhance informational flow within marketing departments to empower sales agents to build reliable and trusted relationships with the SME.

From a technical perspective, cloud systems virtually eliminated the need for investment in technology and operators (i.e. IT specialists) (Ting et al., 2016). The only requirement is access to the Internet and input and output devices (e.g., screens, scanners, and keyboards). Thus, the energy and administrative costs associated with running hardware (i.e. servers and storage desks) can be eliminated (Cervone, 2010). Furthermore, physical efforts and costs associated with building, maintaining, and managing hardware in organisations disappear (Vasiljeva et al., 2017). Besides, the effort and time required to protect, encrypt and safeguard hardware and software are also reduced because security is mainly integrated into the cloud service (Ali et al., 2021).

The outcome from saving on technical and organisational costs is an improvement in net financial benefits, due to the low cost of monthly subscriptions (Ali et al., 2021; Assante et al., 2016). Focus has been directed towards the role of technological features as drivers of benefits, but in reality, these are not only dependent on technical features, but also on organisational aspects (Badewi et al., 2020). These papers have not explained why organisations have a different perception of benefits or the possible reasons for variations in the experience that differ from organisational benefits.

2.2.4 Cloud Computing Success

Determining success in the IT literature is understood to be an elusive concept (Meredith & Zwikael, 2020; Sanchez et al., 2017). Project management success can be defined as delivering an IT artefact on time and within budget (Müller & Jugdev, 2012). Additionally, the use of the application, and consequently the associated definition of success, can include a change in business practices to improve organisational performance (Breese et al., 2015).

Researchers who use success to denote implementation on time and within the budget focus on implementation and project performance, and do not consider use or benefits, as these are assumed to occur naturally or are simply ignored (Meredith & Zwikael, 2020). This research will not focus on project management success in the pre-transition phase (i.e. preparation for putting the application into action) nor will it focus on the transition phase (i.e. putting the application into action), as these streams of research are extensively addressed in the literature (Atkinson, 1999). Instead, the focus of this research is mainly on "use" and "benefits" (Badewi et al., 2020).

The "use" literature mainly focuses on the individual psychological perspective (Khayer et al., 2021), examining the perception, attitudes, and satisfaction of users and stakeholders towards the use of the technology (Seddon et al., 1994). This is especially true of researchers who have adopted the Technology Acceptance Model (Ali et al., 2021; Ferri et al., 2020), innovation diffusion theory (Rogers, 1995), or IS business success models (Delone & McLean, 1992).

This stream of research focuses on the perceptions and attitudes of the users and CEOs, as the focus of this research is SMEs. Measures of positive perception include perceived ease of use, perceived usefulness and satisfaction (Wulf et al., 2021). The current end-user satisfaction with the cloud services is the key antecedent for the extra adoption of the cloud services (Donovan et al., 2018; Güner & Sneiders, 2014; Holloway et al., 2017). Perceived usefulness was noted in the literature as a critical factor when measuring successful adoption of business cloud services (Chen, 2017; Friedrich-Baasner et al., 2018; Loske et al., 2014). It is also defined as "the degree, an individual believes innovation will help them perform a set task" (Ratten et al., 2015). Li et al. (2011) found that perceived ease of use, the perceived benefits of security and trust in the cloudisation process are vital predictors of the adoption of SaaS in SMEs.

Another example is Ferri et al. (2020) study of 161 CEOs of Italian SMEs, which found that CEOs' negative risk perception towards the business cloud application has a significant adverse

effect on the intention to introduce cloud technology in their firms. Still, that perceived ease of use is a compensatory factor mitigating this adverse relationship. Gangwar et al. (2016) surveyed 280 companies in India's manufacturing and IT sector to highlight security perception and perceived usefulness and ease of use as the chief factors affecting intention to use.

It is also included the perceived characteristics of the application, such as the quality of IT services and service provider. For instance, Khayer et al. (2020) examined 300 Chinese SMEs. They determined that end-user satisfaction, information quality, system quality, managerial information technology (IT) capability, and technical IT capability, significantly affect cloud computing usage. Another recent example of this was Neicu et al. (2020) research on CEOs, which collected 315 responses to reveal that the perceived benefits, disadvantages, and perceived image affect satisfaction, which in turn affects intention to use and implement the cloud applications in the Romanian SMEs. Similarly, Skafi et al. (2020) study of 139 SMEs in Lebanon, involving 480 IT staff members, found that that technological (i.e. perception towards the complexity of the cloudisation process and security implications of this process) and organisational (i.e. top management support and their earlier IT experience) constructs are correlated positively with the decision to adopt cloud computing services.

In this stream of research, adopting a psychological perspective, the definition of success is limited to the intention to use, which conveys different perceptions (i.e. ease of use, usefulness, quality of data, quality of implementation). There is an implicit assumption that when an organisation uses an application or technology, the benefits will naturally arise without any need to alter its business practices. They assumed in this research that satisfaction or use is a proxy of concept benefits without the need for a change in business practices. However, without significant change in these practices, benefits are scarcely achieved, and thus the possible intention to embrace more cloud services will be limited (Peppard et al., 2008); i.e. without a change in business practices, the associated benefits will not be realised.

This research focuses on the possibility of change in relation to organisational performance, as changes in business practices arise because of the use of business cloud applications. This aspect of understanding success is minimally covered in the literature despite its greater importance (Attaran & Woods, 2019). The reason for its importance is that the adoption of the technology does not necessarily lead to change in an organisation's performance, as covered in depth in the IT business value literature (Rodrigues et al., 2021). Thus, this research will focus on the post-implementation results and possible factors affecting this performance. It will

accept Garrison et al. (2015) definition of success in relation to the cloud, as the benefits and advantages gained by a firm implementing cloud computing. From Garrison et al. (2015) perspective, success is a multidimensional construct encompassing strategic, economic and technological benefits. This perception is integral to change and successful initiatives. Thus, benefits, as a motivational construct, are defined as a perceived positive advantage in the performance due to the change (Ward & Daniel, 2013). In a consolidated definition of success, it can be defined as the successful implementation of an IT project on time within budget, based on understanding the user's requirements, supporting users to use it, and improving organisational performance by amending business practices (Badewi & Shehab, 2016). Thus, this research adds to the importance of the attitudes and perceptions of users and stakeholders, as they define success as the net benefits derived from adopting business cloud services directed as motivated by the positive perception towards them.

2.2.5 Cloud Computing Success in Saudi Arabia

In Saudi Arabia, technology adoption and integration are still at basic levels, or remain underutilised, which creates inefficiencies in operations, productivity, and business functions (AlBar & Hoque, 2019). The reasons for the inefficiencies in Saudi SMEs have been studied previously (AlBar & Hoque, 2019; Alkhater et al., 2018). These papers argue that SMEs in Saudi Arabia adopt IT utilities to enhance their competitive position and improve their productivity through investments in technology. The findings conclude that IT tools provide the infrastructure to collect and process data to manage SMEs, and can be used for making critical decisions (AlBar & Hoque, 2019). However, the study's limitations are that it only studies SMEs in rural areas. It does not study the impact of failure to adopt the technology on the business processes of urban SMEs.

Further research found that Saudi SMEs that fail to adopt IT are unable to automate their core processes and obtain real-time information to assist with management decision making (Skoko & Ceric, 2010). The above research is important, suggesting that one of the key reasons for inefficiencies in SMEs in Saudi Arabia is the failure to utilise technology effectively. Consequently, they are unable to deliver beneficial products and services to their customers, and they fail to enhance the efficiency of their business processes and functions. Nevertheless, the findings appear to be limited because they do not differentiate between the various types of technologies and their impact on SME business performance. Additional research cites the importance of IT for SMEs by integrating supply chain partners and inter-organisational

functions (Skoko, 2012). Consequently, a lean and flexible supply chain system allows SMEs to deliver products and services to their customers efficiently. The findings suggest that those Saudi SMEs that fail to adopt IT will encounter business inefficiencies that may impact their strategic position. Nevertheless, the research is limited because it does not study the dynamics of different sectors or the impact of technology on performance. Cloud computing can be an effective solution assisting SMEs in Saudi Arabia to improve their productivity and enhance their business goals. However, cloud computing adoption remains unsuccessful in the country. A possible explanation might be that the business value of information technology remains unrecognised and is unknown to owners and managers. IT business value theory needs to be studied as it could provide a mechanism for cloud computing adoption in Saudi SMEs.

Very few studies have been conducted to identify the reasons for failed cloud adoption in SMEs in Saudi Arabia. For instance, Alhammadi et al. (2015) used a web-based questionnaire that was distributed to computing professionals in Saudi Arabia to identify the determinants of cloud adoption in the country. The study found that security concerns, organisational readiness, firm status, top management support, government support, and compatibility were the chief factors hindering or promoting the adoption of cloud computing applications. However, the research was limited because it did not identify business value or business performance as an indicator of cloud adoption. Moreover, it did not identify the requisite technological, organisational, and financial capabilities for cloud adoption. Similarly, Basahel et al. (2016) surveyed the Middle East and North Africa to evaluate cloud adoption among various firms. The results suggest that security concerns have hindered the adoption of cloud computing in these countries. Nevertheless, the study is limited because it does not focus on a particular sector that has its own constraints and challenges while adopting cloud services. In contrast, Almubarak (2017) found that Saudi university hospitals can adopt cloud services as a result of factors like a relative advantage, innovation, IT knowledge, computability, and upper management support. The findings suggest that cloud adoption in Saudi Arabia is successful when there is a combination of technological, organisational, and environmental factors. However, these limitations only study the healthcare sector with respect to cloud adoption. Moreover, the study's findings might not be applicable to SMEs in other sectors.

Albelaihi and Khan (2020) conducted a qualitative study of Saudi SMEs to evaluate cloud adoption there. The main finding they reported is that knowledge about cloud computing applications is limited, which is a barrier to cloud adoption, and privacy and security concerns

also impede the adoption of technologies. A closer look at the above study reveals gaps and shortcomings, as it does not identify the different types of complexities that SMEs face when evaluating cloud computing applications. Another shortcoming of the study is that a superficial analysis of SMEs was performed without investigating the IT, financial, and organisational capabilities needed for the technology. This research is motivated by these shortcomings to deliver a profound understanding and explanation of the factors affecting successful cloud usage in the Saudi SME context.

2.3. Cloud Computing Business Value

The potential business-related cloud benefits are enormous, but they are dependent on the implementation methodology (Garrison et al., 2015), level of usage, level of integration, and ontological aspects (i.e. functions and processes of the applications and data) (Gangwar, 2017; S. Gupta et al., 2017). For example, Allan et al. (2017) conducted an exploratory study of South African firms to determine the business value of cloud computing. They argued that cloud services ensure speed and agility, which represents enhanced value for organisations. However, the above study only superficially mentions the capabilities needed and the complexities faced during cloud adoption. A similar approach was taken by Lynn et al. (2020), who studies novel concepts regarding the business value of cloud computing. The researchers found that the understanding of business value remains vague and inconsistent in the literature when identifying the advantages brought about by cloud computing adoption in SMEs. However, the study is limited because of its failure to study the capabilities needed to generate business value. Moreover, it does not study how various complexities might prevent firms from adopting cloud services.

IT business value literature questions the role of IT investment in organisational performance. Several researchers have not found any relationship between IT investment and organisational performance (Brynjolfsson, 1993). The main explanation for this is that the existence of IT alone is not sufficient to improve the performance (Schryen, 2012). Thus, there are different perspectives proposed to explain this phenomenon. These can be classified into transformation requirements and the existence of organisational resources (i.e., Resource Based View) for successful delivery.

2.3.1 Transformation Requirements

The main driver of success in terms of influencing organisational performance is that significant changes arise in the business practices of the organisation (Ward & Daniel, 2013). Transformation requirements are defined as the interventions needed prior to the successful adoption of the technology (Kehrer & Blochinger, 2018). Transformation requirements are similar to critical success factors. Notably, the critical success factors perspective proposes that unrelated factors are required for the successful implementation of the technology (Al-Mashari et al., 2003). Thus, critical success factors can be reconceptualised into transformation requirements for the successful delivery of transformative initiatives (Badewi, 2021).

The first transition requirement is employee knowledge. Ali et al. (2021) found that employee knowledge is required most in functional business applications (e.g. human resources) and least for communication applications (e.g. email, web conferencing and social networking). Advanced cloud applications, i.e., the ERP cloud application, may require different success factors. Some authors have highlighted the CSF on ERP cloud systems instead of just "cloud services" and presented distinctive results.

The second requirement is service provider quality. A study of ERP cloud by Maqueira-Marín et al. (2017), examining 281 SMEs in Southern Europe, clustered the drivers of success into mainly service provider quality, performance, and collaboration. A successful cloud application is dedicated to digitalising one or a group of processes. Mazumder and Garg (2021) studied 26 service providers to show the six required capabilities of service providers: consultative, orchestration, insights, network management, knowledge access, and standardisation. Without the perception of the quality of the service provider, trust will be hampered, and the relationship will not be sustained long-term, leading to a breach of the service contract (Lin & Lin, 2019). Therefore, this research concurs with Sunyaev (2020) in finding that vendors' service capability is crucial for successful cloud adoption.

Organisational readiness is the third transformational aspect for functional and integrative applications (Denicolai et al., 2021). In the Saudi business functional cloud applications context, Al-Jabri and Alabdulhadi (2016) surveyed 106 IT managers and found that the key transformation requirement was organisational readiness factors, such as top management support and employees' willingness to use these applications. Similarly, Wang et al. (2019) examined 376 Chinese firms and found that top management support was key for successful use of the cloud, but that organisational inertia represented a key barrier to such change.

Another essential form of organisational readiness is the IT infrastructure and availability of administrative support for managing change successfully in business cloud functional applications, as argued by Kyriakou and Loukis (2019).

Fourth, for integrative applications, there are unique factors, such as the level of business readiness to change and restructure practices to realise value from the centralisation of data. For instance, Gupta et al. (2017) studied 93 SMEs in India and found that level of ERP integration in the business process and organisation adaptability to the required changes are key factors in successful ERP cloud computing applications. Indeed, integrative applications, such as the ERP system, demand more fundamental transformation requirements than merely having an email system in place. Usman et al. (2019) evaluated Nigerian SMEs to identify the determinants of adoption of cloud-based ERP. The findings suggest technical, operational, contextual, and innovation requirements are foundational factors supporting the adoption of ERP.

In summary, transformation requirement for an integrative system such as the ERP cloud system goes beyond that for simple mailing or word processing systems. These differences may necessitate additional theorisation to explain the success factors for each of the applications.

2.3.2 Resource Based View

The Resource Based View argues that the main differentiator of organisational performance is “resources” (Barney, 1991). According to Barney (1991), organisations can outperform their competitors only if they have access to Value, Rare, Irreplicable, and Organisational resources (VRIO); i.e. the resource needs to convey a competitive advantage when used, competitors cannot find a substitute for it, it is not replicable in other contexts, and it can be embedded into existing organisation practices. These criteria have been reproduced in the IT literature but from a different perspective. Access to IT and cloud computing in itself cannot be considered a source of competitive advantage because these assets are not rare or unique in nature (Estensoro et al., 2021). However, the chief source of competitive advantage is the evolution of the relationship between cloud systems and organisational practices, including how they leverage the value of the unique practices of the organisation (Garrison et al., 2012). This evolutionary relationship between the resource and organisational context is framed as “capability” (Bharadwaj, 2000). Capability denotes an organisation’s ability to combine its physical and human resources to achieve better performance (Teece et al., 1997). In the IT

context, capability refers to the organisation's ability to move and configure IT-related resources, such as IT infrastructure (Bharadwaj, 2000) or cloud systems (Estensoro et al., 2021), which help firms gain the desired results (Wu et al., 2021).

Thus, capability theory has come to highlight that the main source of value in a resource is its unique embeddedness rather than the access to it (Matarazzo et al., 2021). The justification here is that capabilities are organisationally embedded, non-transferable and not replicable in other contexts (Dehning & Stratopoulos, 2003). For instance, Zheng et al. (2020) found that cloud computing applications are of value to the organisation mainly when the organisation has knowledge management capabilities in place to absorb and assimilate the level of knowledge created by the cloud.

Capability theory underlines the need for several resources to be routinised and applied in day-to-day operations as a way to perceive value from the investment in technology (Helfat, 2017). Therefore, taking this perspective to investigate the IT business value puzzle, IT business value research argued that the appropriate adoption, assimilation and use of the technology serve as the main determinant of the organisation's performance (Liu et al., 2016). Capability in the IT context can be demarcated into IT resources and organisational complementary resources (Badewi et al., 2018). While IT resources underline the capacity of the IT department to acquire and tailor the technology to fit with the organisational context, complementary organisational resources are firm related factors designed to assimilate the technology to radicalise business practices and achieve a leap in performance.

2.3.2.1 Information Technology (IT) Resources

Information Technology resources are broken down into human resources in the IT department and technologically tangible resources (i.e. cloud application) (Melville et al., 2004). This section will focus on human resources in the IT department because the technological resources are addressed in the cloud computing section. Human IT resources are defined as intangible assets affecting an organisation's technological capacity for improved performance (Ravichandran & Lertwongsatien, 2005). Human IT resources are formed by training and experience, which are translated into IT human resources capacity to add to organisations (Kim & Kim, 2013).

IT Human resources are taxonomized as technical, managerial and business (Garrison et al., 2015). According to Garrison et al. (2015), who studied 302 public organisations, relational IT

resources are the most critical factor for achieving cloud success compared to technical and managerial IT capabilities. However, their research was on public organisations and treated the cloud as one thing without considering the differences in the characteristics and challenges associated with different classes of cloud applications. The following sections will define and review research on each for use in this research.

The first consideration is Business IT Resources (BIRs), which is defined as the necessary business acumen to foresee emerging technologies and leverage them effectively to align business processes with organisational goals (Garrison et al., 2015). The second is Human Technical IT Resources (HTIRs), which are defined as human resources knowledge, experience, and the ability to deal with the technical challenges of the technology (Kim & Kim, 2013). The challenges here include integration, connection to the server, data management, and technical security issues (Géczy et al., 2012). Traditionally, HTIRs affects an organisation's ability to be flexible and provide a scalable foundation for business applications (Niederman et al., 1991). This was important in the on-premises application, but in the cloud context, the scalability of the application is built upon features that do not require technical knowledge or HTIRs.

It may be a useful reference point in the cloud context, but only for private ones developed in house (Kim & Kim, 2013). Public cloud applications do not need technological alignment, integration or customisation, and if they do, then this is achieved through APIs, not from in house IT experts (Géczy et al., 2012). Thus, HTIRs are not adopted as a concept for investigation in this study. The third is Managerial IT Resources (MIRs), which are defined as the capacity of human resources in the IT department to lead projects, and engage in coordination and leadership skills to expedite technology integration and deployment (Bharadwaj, 2000). In the on-premises application literature, coordinated planning and deployment of information technologies were believed to be necessary to guarantee efficiency (Georgantzas & Katsamakas, 2010). Similar evidence was found for large cloud applications at the early age of cloud development. However, in the SMEs context, it is not expected that current cloud applications will require sophisticated project management skills to lead implementation projects. Rather, the transformation process as part of deployment will rely mainly on business change managers, not IT departments (Badewi, 2021).

2.3.2.2 Organisational Complementary Resources

Organisational Complementary Resources (OCRs) are defined as non-IT resources that exist in an organisation and have the capacity to support the successful assimilation of technology to influence organisational performance (Melville et al., 2004). The definition of OCR in the IT literature is broad enough to include resources such as individual resources (e.g. knowledge, skills, and competencies) (Badewi et al., 2018), enterprise resources (e.g. financial resources and physical resources) and organisational capabilities (Melville et al., 2004) (e.g. absorptive capacity (Zahra & George, 2002)). In the cloud literature, limited papers are available concerning OCRs.

Since the context of this research is SMEs, enterprise resources are avoided because it is presumed that SMEs do not afford access to the same enterprise resources as large corporations. The focus of this research will mainly be on individual and organisational resources, such as Zheng et al. (2020) taxonomized in their research proposing factors affecting organisational performance in cloud application settings. Zheng et al. (2020), in a study of 520 SMEs deploying cloud computing in China, found that employees' knowledge capital (i.e. knowledge and skills) and organisational ability to manage knowledge (i.e. knowledge management capability) are crucial factors determining the perceived benefits from the adoption of cloud computing services. Other individual resources, such as experience and decision making, were found to have an impressive influence on the speed of adoption of cloud services (Tehrani & Shirazi, 2014). At the organisational level, different capabilities have been addressed, such as knowledge management, as in Zheng et al. (2020). The use of a knowledge management capability is important but seems insufficient to explain success because it is not only based on the process of dealing with data and knowledge in an organisation; rather, it also involves the process of using this knowledge to take action and improve business practices (Al-Emran et al., 2018). Therefore, this research proposes the use of an absorptive capacity perspective instead of a knowledge management perspective.

The absorptive capacity perspective extends the knowledge management perspective by focusing on four main capabilities: acquisition, assimilation, exploitation, and transformation (Zahra & George, 2002). Capability is defined as "a firm's ability to perform repeatedly a productive task, which relates either directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs into outputs" (Grant, 1996). It mainly concerns the practices that expand an organisation's capacity to perform a certain activity (Wu et al.,

2021). In this context, the absorptive capacity relates to the organisation's practices to acquire and assimilate knowledge in the internal and external environment and its capacity to exploit and transform business practices to gain value from such knowledge (Khayer et al., 2021). This capability reflects a firm's ability to reconfigure and recombine its resource base to adapt to changes in the surrounding environment (e.g. new technology, new options, new opportunities) and improve organisational performance. Absorptive capacity has a significant effect on the organisation's ability to absorb new technologies because of the strategic flexibility generated, as found in a study of 282 Italian SMEs (Miroshnychenko et al., 2021).

The nexus of cloud computing and absorptive capacity is highly interactive. Investment in cloud computing affects absorptive capacity, and absorptive capacity improves the ability to embed cloud services in businesses as usual. The role of cloud computing in improving absorptive capacity has been studied by Chang et al. (2019), who found that absorptive capacity arising from the adoption of cloud computing improves organisations' competitive advantage in a study of 161 IT managers working for SMEs.

Meanwhile, the absorptive capacity of the organisation improves the organisation's capacity to absorb cloud services, as found by Cohen et al. (2014) in a study of 86 SMEs in South Africa. The reasons for such a relationship is that absorptive capacity indicates the organisation's ability to identify new features and new products associated with cloud features, ability to assimilate knowledge pertaining to the features available in the market and inside the organisation, and the ability to exploit and transform business practices to obtain the best value from these features (Kranz et al., 2016). Kranz et al. (2016) examined six German case studies and found that the absorptive capacity of organisations was a major determinant explaining the pace of acceptance and embedding of cloud services in day-to-day organisational routines. Therefore, it has been noted that a major challenge for SMEs in developing countries wishing to adopt business cloud services is their absorptive capacity, as noted in a study of 350 Tunisian SMEs (Youssef et al., 2015).

In summary, cloud services alone will not add value to an organisation unless it has the capacity to fully absorb them. This requires that they have organisational complementary resources in general and an absorptive capacity in particular.

2.4 Research Analytic Framework

After synthesising the literature relating to business cloud services, cloud business services are different. They are classified into DCS, PBCS, and ECS. Each one of them has its own technical resources that could have special value proposition and can be assessed by the level of success, use and benefits (as shown in Figure 2-2). Success, use and realising benefits are highly correlated factors. Value is achieved only when business practices are changed by using cloud services and improvements to the organisation's key performance indicators result. To achieve business value from investment in the technical resources (i.e. cloud services), there are transformation requirements and complementary organisational resources. The transformation requirements are those aspects that are needed only at the time of implementation and shortly after full adoption of the cloud. They may include service vendor services, users and organisational efforts to adopt a specific cloud service. Organisational complementary resources are existing organisational resources that will assist the organisation in selecting a suitable cloud service while ensuring readiness to absorb it. They may include the organisation's absorptive capacity and other organisational capabilities that influence its capacity to assimilate the new cloud services smoothly.

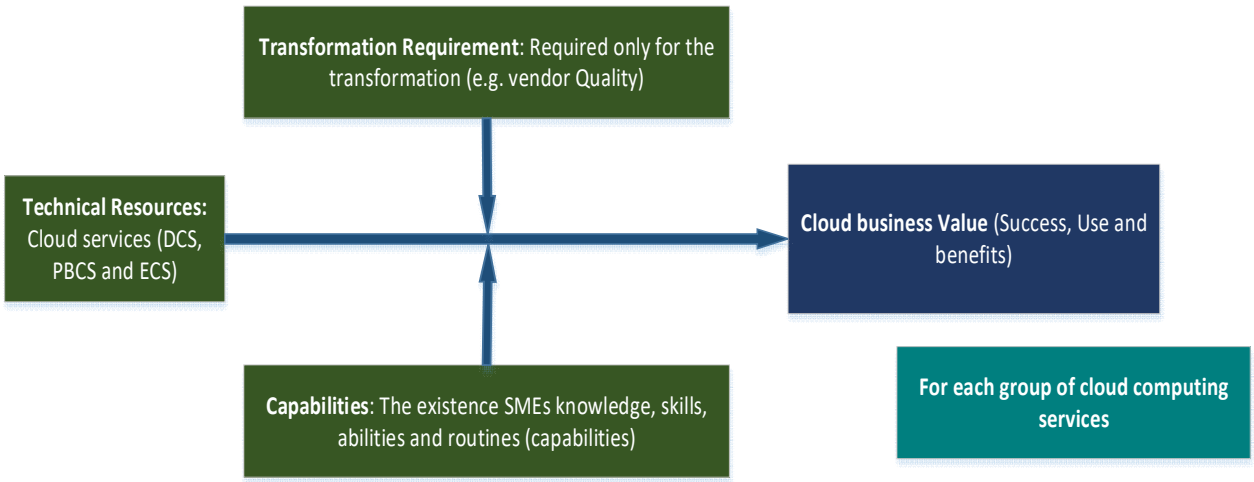

Figure 2-2: Research Analytical Framework

2.5 Research Gaps

After reviewing the literature, the following research gaps were revealed:

Research gap 1: Lack of appropriate framework for Business Cloud Services in the SMEs environment

Previous studies regarding cloud computing adoption have treated BCSs as homogenous frameworks that can be applied to any firm in any industry. Primarily, cloud computing refers to a single application that is not altered to fit the nature of a specific organisation's requirements or to include organisational complementary resources, as in (Section 2.2.1). Thus, these frameworks have identified cloud computing as a single type with identical levels of requirements and organisational capabilities when implemented at any firm, as in (Section 2.2.3). The result is that the requirements and capabilities are amalgamated with the rationale that each application needs only a generalised framework to be successfully adopted by an enterprise.

Research gap 2: Lack of understanding capabilities and transformation requirements for different business cloud services (BCSs)

The literature reported on studies of BCSs from one or two perspectives only which are transformation requirements and capabilities, as in (Sections 2.3.1 and 2.3.2). This research classified the BCS into DCS, PBCS, and ECS. There are several attempts to define capabilities and transformation for each of them; but there is no dedicated models to explain the variation in the success of each of them. In other words, this represents a gap in the literature, as SMEs can manage requirements when they have the relevant capabilities to assess, adopt, and manage cloud computing services to fit their business models. The failure to utilise all three perspectives has significant implications for SMEs.

This study addresses these gaps via building a framework using state-of-the-art literature and knowledge to develop a business cloud services' framework for SMEs and generating an operationalised readiness matrix to assess and assist SMEs to achieve success when implementing different types of cloud services.

Chapter 3 : Research Methodology

3.1 Introduction

The aim of this research is to understand the variation among organisations in the recouping of BCS benefits and to develop an assessment tool to aid practitioners in improving the success of the adoption of BCSs. Thus, a pragmatic research paradigm is adopted to fulfil this research aim. This chapter starts by underlining the research's philosophical paradigm in approaching and dealing with the problem. In response, this chapter is structured as follows. Section 3.2 develops the researcher's pragmatic paradigm for revealing the evidence in an untraditional way. Then, in Section 3.3, illustrate the research approach followed by Section 3.4 research strategy, which explains the strategies chosen to ensure the research phases are complete. The final Section 3.5 discusses the values and measures taken in this research to confirm its quality.

3.2 Research Paradigm

This research seeks to predict the level of success in the cloud computing environment for SMEs by defining cloud applications, requirements, capabilities, and successes for each of the three groups of applications: i.e. DCS, PBCS, and ECS. A research paradigm is defined according to the academic objectives of a research study. The research paradigm here consists of three main aspects: ontology, epistemology, and axiology. The ontological stance of the research defines the nature of reality in terms of its being singular (i.e. universal) or contextual (i.e. different based on the context) (Guba et al., 1994).

For a positivist researcher, reality is universal and unalterable relative to context, time or respondent, whereas the interpretive researchers believe that reality is defined based on context, respondents and each specific situation (Creswell, 2009). Modern schools, such as the post-positivists, argue for a singular reality but in relation to a country, industry and/or sector (Bryman, 2003). The pragmatist argues for a mixed ontological stance that is needs-based, adopting a positivist perspective in some areas of the research and an interpretivist one in other areas (Morgan, 2007). The key research constructs are defined according to the assumption that reality varies, and each interviewee is viewed according to context, and it is accepted that his/her reality may differ from that of others. To generalize, this research adopts a positivist paradigm, subsequently using a questionnaire. To validate the research finding, the ontological stance can be adapted to an interpretive one to ascertain how each case study context perceives and accepts

these aspects of the framework when explaining and predicting success based on the proposed factors.

Epistemological stance defines the knowledge creation process (Guba et al., 1994), i.e. how we know what we know. In positivist research, a reductionist and rational stance is adopted, in which knowledge is defined by deducing it from the literature and examining it empirically extrapolating to large scale samples (Guba et al., 1994). The interpretive researcher, who believes the reality differs from person to person, argues for the social construction of reality; i.e. that reality is defined by interviewees based on their unique perceptions and views (Tashakkori & Creswell, 2007). This research adopted the two paradigms. Firstly, the basic framework is deduced from the literature, as positivism. Secondly, this basic framework is improved based on individual experiences and perceptions, contributing an interpretive component. Thirdly, the framework deduced from the literature and interviews will be examined objectively in the large sample, as positivism. Fourth, the framework examined is applied across three cases to capture the participants' perceptions and views as interpretive data. Thus, this research adopts the pragmatic paradigm.

The axiological stance indicates the relationship between the researcher and reality. While positivism researchers argue for objectivity and separation between the researcher and the production process that relates to reality, interpretive researchers argue that reality is inseparable and the researcher is part of the reality production process (Tashakkori & Creswell, 2007b). Thus, positivism researchers use objective quantified methods to examine their research proposals in an objective way, while interpretive researchers use subjective qualitative methods to create knowledge in collaboration with the cases under investigation (Brown et al., 2017). This research adopts mixed axiological stances. The researcher adopted subjective qualitative methods to develop and validate the study framework, using objective quantitative methods to test it.

3.3 Research Approach

There are three well-known research approaches: qualitative, quantitative, and mixed methods. The mixed approach combines the qualitative and quantitative methods. The choice between these three types depends on the nature of the research and how to achieve the research aim and objectives. The qualitative method is most suitable when the main research objective is to improve the understanding of a phenomenon (Royse, 2008). Furthermore, Cassell and Symon (1998) explain that the qualitative method is preferred if the research question is concerned with organisational processes. The quantitative approach is a technique used by researchers to collect

quantitative data or information related to figures and measurements. Thus, quantitative studies rely on collecting quantitative facts by employing various methods (Easterby-Smith et al., 2012). In this study, the researcher adopted a mixed-methods approach because of the nature and aims of the current research. Using mixed methods, as confirmed by (Kaplan & Maxwell, 2006), helps to acquire an in-depth understanding of the richness of the research topic, in this case, how BCSs benefit SMEs in Saudi Arabia, allowing for generalisation of the study findings.

3.4 Research Strategy

As visualised in Figure 3-1, this research adopted a multi-phased pragmatic approach (i.e. interpretive and positivist) organised into four main phases: Developing, Improving, and Examining the study framework, and Developing and Validating assessment tools. The research is delineated into three main models: : i.e. DCS, PBCS, and ECS. Each of the following subsections details the methods required for each phase.

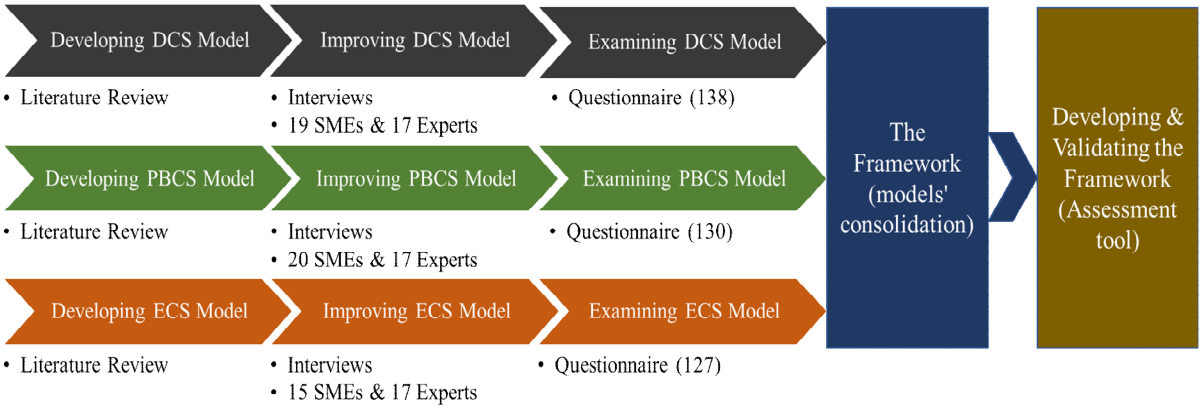

Figure 3-1: Methodology Structure

3.4.1 Developing the framework: State of the Art

The first phase of this research sought to identify and define the framework in terms of the requirements and capabilities required for BCSs success. The Framework consists of three models for each group of BCSs. The literature review was used to determine these requirements and capabilities. The main sources used are "ScienceDirect", "ProQuest", "EBSCOhost", "Emerald Insight", "IEEE Xplore", and "Scopus", which are all available from Cranfield University Library. The search concerns topics like 'capabilities theory', 'cloud adoption', 'implementation`, 'requirements', 'SMEs', and combinations of these and other keywords (e.g., 'cloud computing, 'cloud computing in SMEs' and 'cloud computing requirements'). The time span employed when searching the articles was between 1980 and 2022, and was limited to related subjects, articles in English, and full-text articles.

3.4.2 Improving the framework: Expert interviews

The second phase followed the interpretive paradigm and was designed to improve the framework. The following sections underline the recruitment process and interview profiles, as well as the interview guide.

3.4.2.1 Recruitment process

This research targeted two stakeholder groups (cloud experts and SMEs users). Due to Covid 19 face to face limitations, LinkedIn was used to identify SMEs and Experts. The search focused on the profiles of Business Owners or CEOs for finding SMEs and "Cloud experts". SMEs were filtered based on questions related to cloud adoption, name, and the characteristics of the applications used. Experts were filtered based on the number of years' experience, and only those with in excess of 5 years' experience were accepted. The invitations were sent to 243 SMEs and 154 experts. As summarised in Table 3-1, and Table 3-3, the qualifying accepted invitations totalled 17 experts and 54 SMEs. The average time taken for the interviews ranged from 30 minutes to one and a half hours, as summarised in Table 3-2.

Table 3-1: Interviews Coding

	SMEs		Experts
	Number	Coding	
Digitalised	20	SME 1-20	17
Packaged	19	SME 21- 40	
Enterprise	15	SME 41-55	

Table 3-2: Cloud Experts Interviews

	Position	**Experience**	**Media**	**Interview Length**
1	SAP Consultant	5 years	Phone interview	35 minutes
2	Data Technical	8 years	Face to Face	40 minutes
3	IT innovation manager	6 years	Phone interview	45 minutes
4	Technology Manager	5 years	Phone interview	40 minutes
5	Senior Consultant at Capgemini Invent	15 years	Face to Face	39 minutes
6	Strategic Advisor at Advice Cloud	13 years	Phone interview	40 minutes
7	Director (Project Manager)	6 years	Face to Face	50 minutes
8	Platform Architect	7 years	Phone interview	55 minutes
9	Chief Information Officer	8 years	Phone interview	45 minutes
10	Business Transformation Manager	7 years	Face to Face	50 minutes
11	Chief Technology Officer	6 years	Phone interview	40 minutes
12	Data Technical Product Owner	7 years	Phone interview	50 minutes
13	Manager Knowledge Management	10 years	Face to face	55 minutes
14	Epicor ERP Contractor - Transformation	5 years	Phone interview	45 minutes
15	Principal Consultant of Cloud Managed Services	8 years	Phone interview	30 minutes
16	SAP Consultant	5 years	Phone interview	55 minutes
17	Cloud Consultant	7 years	Phone interview	35 minutes

Table 3-3: SMEs User Profiles

Digitalised Applications					Packaged Business Applications					Enterprise Applications				
Code	Age	Industry	Applications	Size	Code	Age	Industry	Applications	Size	Code	Age	Industry	Applications	Size
SME 1	6 – 15	R&T	Google business suit	10-40	SME 21	6 – 15	Services	Odoo	10-40	SME 41	6 – 15	Services	SAP	+40
SME 2	<5 years	R&T	OneDrive	1-10	SME 22	6 – 15	Services	SAP for finance, Salesforce for CRM	10-40	SME 42	6 – 15	Manu	SAP	+40
SME 3	<5 years	R&T	OneDrive	1-10	SME 23	6 – 15	Manu	Falcon HR App	10-40	SME 43	+15	Manu	SAP	+40
SME 4	<5 years	Manu	SmartSheets	1-10	SME 24	6 – 15	Services	Odoo for finance	10-40	SME 44	6 – 15	Services	Oracle	+40
SME 5	<5 years	Manu	Google Drive	1-10	SME 25	6 – 15	Manu	ALMUHASB ALSHAML and SMACC (accounting)	10-40	SME 45	+15	Manu	SAP by Design	+40
SME 6	<5 years	Manu	OneDrive	1-10	SME 26	6 – 15	Services	Sage Intacct saves time for accounting	10-40	SME 46	6 – 15	Manu	SAP	+40
SME 7	<5 years	R&T	OneDrive	1-10	SME 27	6 – 15	R&T	our invoice application is (QEOOD	10-40	SME 47	6 – 15	Services	G suite - all functions	+40
SME 8	<5 years	Manu	google drive	1-10	SME 28	6 – 15	Services	Oracle for HR	10-40	SME 48	+15	Services	JD Edwards	+40
SME 9	<5 years	R&T	SmartSheets	1-10	SME 29	6 – 15	Manu	CRM – Orchard and accountants use Sage	10-40	SME 49	+15	Services	ERP (Oracle	+40
SME 10	6 – 15	R&T	Dropbox	10-40	SME 30	6 – 15	R&T	CRM system Online platforms	10-40	SME 50	+15	R&T	SAP	+40
SME 11	<5 years	R&T	Google Drive	1-10	SME 31	6 – 15	Services	Sage Business accounting	10-40	SME 51	+15	R&T	SAP	+40
SME 12	6 – 15	R&T	OneDrive	10-40	SME 32	6 – 15	R&T	Workplace for HR, Payroll Xero - accounting software	10-40	SME 52	+15	R&T	Oracle	+40
SME 13	6 – 15	Manu	OneDrive	10-40	SME 33	6 – 15	Services	Oracle for procurement and HR functions	10-40	SME 53	6 – 15	R&T	Oracle	+40
SME 14	<5 years	R&T	MS365	1-10	SME 34	6 – 15	R&T	Dynamics which is a CRM	10-40	SME 54	+15	Services	MS Dynamics	+40
SME 15	6 – 15	Manu	OneDrive	10-40	SME 35	6 – 15	Manu	Workday: HR	10-40	SME 55	6 – 15	Services	MS Dynamics	+40
SME 16	<5 years	R&T	OneDrive	10-40	SME 36	6 – 15	Services	Oracle - HR systems	10-40					
SME 17	<5 years	R&T	Edrm	10-40	SME 37	6 – 15	Services	Oracle	10-40					
SME 18	<5 years	Manu	Google docs	1-10	SME 38	6 – 15	R&T	Work-day HR	10-40					
SME 19	6 – 15	R&T	Google docs	10-40	SME 39	6 – 15	Services	SAP. Used for finance and HR processes	10-40					
					SME 40	6 – 15	Services	SAP for finance	10-40					

3.4.2.2 Interview Guide

The SMEs and the experts were asked to define success, the capabilities, and the requirements for successful implementation, as seen in Table 3-4. After listening to their answers, the researcher explained to them the findings from the literature and gathered their feedback concerning which they believed to be valid aspects. SMEs were questioned on their cloud applications portfolio, their experience of success, the reasons for success and for challenges.

Table 3-4: Interview Guide

	SME on the adopted applications	Experts (on three groups)
Introductory questions	Size of the organisation, name of the applications	Number of years of experience, which applications they have experience with
Definition of success	Definition of success for their adopted applications for SMEs/ all three groups for experts	
Requirements for success	Requirement for success for the adopted applications for SMEs/ all three groups for experts	
Capabilities for success	Capabilities for success for the adopted applications for SMEs/ all three groups for experts	
Other concerns	Advise for improved success	
Improving the model of each group	Discuss the validity of the requirements defined from the literature	
	Discuss the validity of the Capabilities defined from the literature	

3.4.2.3 Interview Analysis

Since the researcher intended to explore the rich insights. The entire interview conversation was recorded with consent from the respondent. Data collected was transcribed, cleaned, coded line by line by tracking the occurrence, meaning of words, phrases, getting the themes identified. The responses were grouped into major predefined themes based on the literature and emergent themes are recorded .

3.4.3 Examining the framework: Survey research

The third phase was a positivistic paradigm (i.e. questionnaire). A positivistic questionnaire assumes that reality is not known (i.e. the respondents do not know about the relationships). Thus, the respondents are asked about different practices and the use of correlational and structural equation modelling to measure and test effects and relations. This questionnaire was developed from the findings set out in the previous phase. The validity and reliability of the questionnaire were tested.

3.4.3.1 Sampling process

LinkedIn and social media (Twitter, Facebook and LinkedIn Groups) were used to circulate the questionnaire (Appendix A). The researcher sent the questionnaire to 650 SMEs to individual LinkedIn accounts, targeting those titled Business owners or CEO. The final number of responses was 138 for the DCS, 130 for PBCS and 127 for ECS, as summarised in Table 3-5.

Table 3-5: Demographic Data

		Digitalised	Packaged	Enterprise
Number of employees	1-10	99	22	0
	10-40	30	80	27
	+40	9	28	100
Level of sales	>1,000,000$	100	55	2
	1M – 10 M$	30	52	90
	+10 M$	8	32	35
Organisation age	<5 years	97	11	8
	6 – 15	37	89	79
	+15 years	4	27	43
Industry	Services	30	46	62
	Manufacturing	58	40	37
	Retailing & Trading	50	44	28
Total		138	130	127

3.4.3.2 Questionnaire Design

The questionnaire was designed based on a 7-point Likert scale with responses ranging from strongly agree to strongly disagree for a set of statements. The questionnaire comprises two main sections: one concerning the demographic data and the other the research constructs. The demographics are limited to the number of employees, level of sales, size of organisation, industry, and nature of cloud applications (to direct the participant to the right questions). The second group of questions related to the research constructs were developed from the literature and enhanced by the interview data. The respondents had to pick only one option for each statement, reflecting how much they agreed (or disagreed) with each of the statements. The Likert scale method is commonly used in research based on surveys to measure participants' attitudes towards a phenomenon or situation expressed in simple and clear statements (Joshi et al., 2015). The choice of the Likert scale helps obtain robust quantitative analysis from the data obtained (Joshi et al., 2015).

3.4.3.3 Questionnaire Administration

The questionnaire was uploaded to Qualtrics, and a link was generated. The questionnaire was administered in both Arabic and English. To guarantee the clarity of the questions, the questionnaire was checked by four researchers at the Cranfield University. This review was useful for reformulating some questions and improving the content of the survey.

3.4.3.4 Questionnaire Quality: validity and reliability

The construct measurements were examined to ensure validity and reliability. The tool used to achieve this were the Confirmatory Factor Analysis (using Structure Equation Modelling – PLS) and Cronbach Alpha. All the criteria were passed, indicating that the constructs were valid and reliable and applicable to the research. The details and results from these robust tests are presented in their relative chapters to avoid redundancy.

3.4.3.5 Analytic Model: SEM

The proposed model was analysed using two levels of analysis in SEM, the measurement model, and the structural model. The measurement model is an essential step in SEM, and without it, the results of any analysis will be misleading (Kline, 2011). At the measurement level, the relationships between latent variables and their indicators were examined (Faller et al., 2006; Hair et al., 2010). In other words, the relationships between factors in the proposed model and items used to measure those factors were assessed at this stage. Moreover, at the measurement level, the evaluation of construct validity and construct reliability was completed in order to ensure the instrument was accurately measuring what it is supposed to measure (Hair et al., 2010). In the case of the structural model, the relationships among the latent variables were examined (Hair et al., 2010). Thus, the analysis focused on the relationships between construct variables, rather than relationships between construct variables and the observed variables (indicators). At this stage, the model fit was assessed, and the relationships between the construct variables were examined. Hence, the hypothesised relationships were tested at this point. Several software packages can be used for SEM analysis, such as SPSS AMOS, EQS, Mplus and LISREL. In this research, the Smart PLS software was used to analyse data through SEM due to the availability of the software (Byrne, 2013). The measurement model and structural model

will be explained in detail, together with the results, as will be presented in the following Chapters 4, 5 and 6, respectively.

3.4.4 Developing and validating the tool: Case study research

The fourth phase is to validate the framework as an assessment tool. The validation was achieved by adopting a confirmatory case study approach to validate and verify the assessment tool. The tool was developed based on the quantitative results from the model examination and validated and verified according to three case studies in Saudi Arabia. The tool was designed based on the questionnaire findings. The questions in the tool were derived from the questionnaire questions.. A benchmark score for the questions was derived from the quantitative responses from the questions.

The validation cases were selected on the basis of voluntary responses to a call on LinkedIn. Due to the Corona virus lockdown restrictions, three companies participated. All three were analysed, and the findings are both rigorous and rich. Chapter 7 does not aim to discover novel data or create new theories. Rather, it is aimed to apply the tool and propose strategies for remedying weaknesses via the BCSs framework. Thus, selecting comparable cases was not the chief intention. All SMEs work in the Management Consultancy services area, but the diversity of the cases enriches the data and increases the generalisability to different contexts.

In each of the case studies, profiled in Table 3-6, the organisational context and background were reviewed through secondary data (i.e. website and other published documents on the organisation) and interviews with senior members. A survey instrument, in the form of a questionnaire, was sent to IT managers, heads of departments, and the CEO to establish the level of capabilities in the organisation and the perceptions towards complexities for implementing each of the BCSs. Each stakeholder received a different version of the questionnaire to ask about personally relevant details only, i.e. the IT managers were asked about IT capabilities and complexities while the financial managers were asked about the financial capabilities and requirements. The researcher benchmarked the capabilities responses to other organisations in the database, as collected in the previous phase, to indicate each case study organisation's strengths (above the benchmarks) and weaknesses (below benchmarks) and the necessary capabilities to deal

with each of complexities associated with the different BCSs, so that the delivery can be successful. The report consolidating these findings and recommendations was presented to the key stakeholders (i.e. CEO, IT and managers) at a workshop to gather their feedback on the assessment tool.

Table 3-6: Case Study (Company Profiles)

Case	Age	Size (employees)	Role in the firm	Exp	System used	Media	Industry
Case N (A)	6	10-20	SME owner	5	OneDrive	Face to face (notes taken)	Consultancy services
Case E (B)	7	20-40	Business Owner	6	Accounting system Task management system	Online Focus group (notes taken)	Managerial Consultancy services
			Accountant Manager (third party)	2			
			IT Manager	3			
Case D (C)	9	50-65	Top Management	8	Oracle Cloud	Online Focus group (notes taken)	Managerial Consultancy services
			Chief Tech Officer	4			
			Finance Manager	5			
			HR Manager	4			

3.5 Research Ethics

The concept of research ethics relates to the ethical principles of social responsibility. Researchers need to implement ethical protocols when working with people to generate confidence in the respondents and facilitate the collection of reliable data for analysis. This helps with the transparency of research by developing valid and reliable results. Ethics help to provide guidelines for the responsible conduct of research. A higher ethical standard is created for researchers when they engage with the research process. The research principle of objectivity was applied in this study to avoid bias in the experimental design, data analysis, and data interpretation. Another important endeavour was to obtain the informed consent of the participants. In other words, they were given information about the objectives of the research process. Their consent was obtained to enable them to answer the questions satisfactorily and conveniently. The research was completed in accordance with the Cranfield University policy with approval number (CURES/5973/2018).

3.6 Summary

This research adopts a pragmatic paradigm by combining the interpretive and positivism worldviews in one research. The framework is developed with literature and improved by expert interviews. The survey is used to examine and generalise the findings. The final models are integrated into a single framework in Chapter 7 to develop the assessment tool and validate it in three case studies.

Chapter 4 : Digitalisation Cloud Service (DCS) Model

4.1 Introduction

This chapter aims to develop, improve, and examine the Digitalisation Cloud Service (DCS) model. For many businesses, DCS is first and simple step of using cloud services. This relates to the digitalisation of office paperwork using tools like Microsoft Office, Google Workspace or equivalent.

This chapter is structured based on the methodology adopted to reach the final model of DCS, and as visualised in Figure 4-1. Section 4.2 will present the results from the literature review that help develop the state-of-the-art with the requirements and capabilities to realise the potential benefits of deploying DCS. The results of Stage One are summarised into interview guidelines for interviewing experts and SMEs about these requirements and capabilities. The purpose of Section 4.3 is to use qualitative data from the experts to redefine this in terms of the technical resources (4.3.1), to augment and extend the requirements (4.3.2) and capabilities (4.3.3) to fit with this research context (i.e., SME context), and to redefine the success of the DCS (4.3.4). Based on the findings, a questionnaire was developed for examining the proposed relationship based on the interviews. Thus, Section 4.4 is devoted to the analysis of the questionnaire results. The final section, Section 4.5, presents the final model.

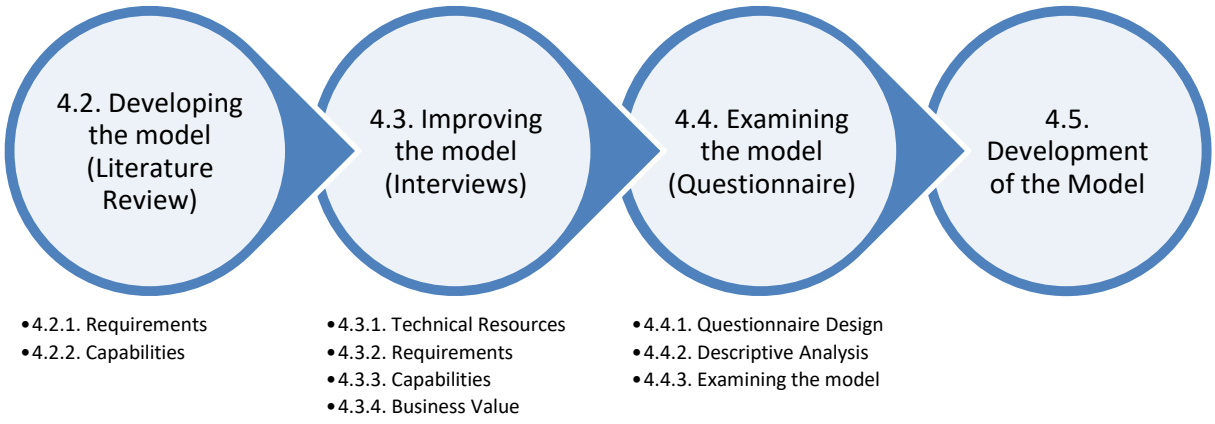

Figure 4-1: Digitalisation of the Cloud Service Structure

4.2 Developing DCS Model (State of the Art)

The main focus of DCS adoption is to digitalise manual and written documents. In DCSs, the main aim is to enable the electronic communication of the unstructured data and files across departments and to retrieve these documents wherever Internet access is available (Blumberg, 2003). It can be defined as an unstructured digital platform. Several applications are available on the market to fulfil these objectives, including Dropbox, OneDrive, SharePoint, and Google Drive. These help SMEs to reap the benefits of cloud computing through the provision of simple, easy to access, understand and implement off-the-shelf solutions. Based on the IT business value framework (Melville et al., 2004), the business value from investing in technology comes from both technological resources and organisational complementary resources. The technical resources here are mainly the cloud storage system, whilst the capabilities proposed based on the literature are HR resources, absorptive capacity and IT management. The literature shows that organisational and service provider requirements need to be met to ensure the effective adoption and assimilation of cloud storage systems.

4.2.1 Requirements

Fulfilling the requirements required to perform the task can be a vital factor in its success (Koelsch, 2016). The literature suggests that there are three main factors that influence the ability of firms to recoup the benefits from the deployment of DCS. Service providers require users to have confidence in applications and organisational transformational requirements. The organisational transformational requirements involve both individual requirements to use and tailor the application tools, and organisational efforts to incorporate these applications into business as usual.

4.2.1.1 Service provider

The first requirement is to ensure the right service provider is selected (Yoon & Kim, 2015). The service provider is required to be reliable, professional, high-quality, responsive and to ensure punctual delivery, and proximity to the workplace. Reliability refers to the perception of users that the service provider is reliable in terms of delivering services that are free of errors, bugs, or mistakes (Malhotra et al., 2005). The better the perception of the reliability of the service, the lower the resistance to using the software

applications (Marston et al., 2011). The main theory here is the Technology Acceptance Model, in which the perception of reliability is a preliminary indicator of the level of acceptance regarding the use of the application (DeLone & McLean, 2003).

Professionalism is defined as the perception of users that the service provider behaves in a professional and objective manner and has relevant technical and business knowledge and skills. Professionalism has been found to be positively associated with the use of applications (Son et al., 2014) because users perceive that the service provider is providing a service based on their business and technical knowledge, and is competent to deliver it (Lang et al., 2018). These perceptions give a perception of the reliability of the delivered services (Kim et al., 2017; Vance et al., 2008).

The quality-of-service provider refers to the perception of the user that the services delivered are meeting or exceeding expectations (Zhang & Ravishankar, 2019). The perception of the quality of the service provider is another indication of the reliability of the provider (Lang et al., 2018), which gives users the confidence to use the application (Kim et al., 2017) and thus reduce any hesitancy to adopt the technology (Lang et al., 2018).

The last aspect of the service provider is the perception of responsiveness. Responsiveness is defined as the users 'perception that the service provider is available when needed or when there is a need for technical or business help. This perception gives the users the required confidence to use the application safely. This can be seen as a vital factor for technology adoption in general (Dhagarra et al., 2020) and the use of DCS (Torres et al., 2018). Therefore, the literature suggests that to have successful digitalised cloud services, and there is a need for competent service providers (Davis-Sramek et al., 2009; Oliver, 2018; Xiao et al., 2020). Using the same analogy, this research proposes that:

Proposition 1: Service providers (their reliability, professionalism, quality, and responsiveness) are the main antecedents for delivering successful DCS.

4.2.1.2 Organisational Requirements (Skills, practices, communication)

The second requirement for the successful assimilation of the DCS is the level of effort the organisation needs to put in, in order to recoup the benefits. The main model of the

DCS is communication through an unstructured digital platform. Thus, to unlock the required benefits, there is a need for organisational efforts to change business practices. The literature identifies many organisational requirements for the assimilation of DCSs. The DCS application needs organisational arrangements in terms of employees 'skills, practices (Walser et al., 2021) and communications (Chang et al., 2016). According to the literature, employees'skills affect the extent of adoption of unstructured and highly innovative applications (Singh et al., 2021) but are less needed in structured applications where the routines are well defined. Similarly, the more the communications are structured, the less the need for effort to adapt (Chang et al., 2016). Similarly, the less structured the communications channels (i.e. loose communications systems), the more challenging it is for employees to adapt and to fit with them (Chang et al., 2016).

Proposition 2: Organisational Requirements (Skills, practices, communication) are the main antecedents for delivering successful DCS.

4.2.2 Capabilities

According to the resource based view (Kohli & Melville, 2019), complementary organisational resources are the main enablers to unlocking the potential benefits of IT investments. The OCRs here are divided into organisational and functional capabilities. The organisational capabilities are based on the absorptive capacity theory, and the proposed capacity here is the acquisition capability. The functional capabilities refer to the ability of the HR department to educate and train employees (i.e. HR learning capabilities) and the IT management capabilities required to build the solution on time and within budget and to select the right solution).

4.2.2.1 Organisational Capabilities (Acquisition Capability)

The organisational capabilities required to identify the right service provider constitute the acquisition capability. Acquisition capability is defined as the organisation's ability to monitor and identify changes in the environment to determine the suitable resources to deploy (Bjorvatn & Wald, 2018; Cohen, 1992). This capability is rooted in the organisation's practice of searching for relevant information concerning the relevant industry, everyday business within the company, and motivation from the management to encourage employees to use information sources within the industry (Miroshnychenko

et al., 2021). Through these practices, it is proposed that the organisation will be able to use technology more successfully.

Proposition 3: Organisational capabilities (Acquisition) affect DCS Success positively

4.2.2.2 Human Resources Capabilities

The first functional capability required to deal with the expected effort to assimilate digital cloud computing services is the HR department (i.e., HR learning capability and recruitment). First, regarding recruitment capabilities, access to cloud and storage applications is limited in developing countries due to infrastructural and educational challenges (Karim & Rampersad, 2017). Thus, in the literature, the HR department should be able to recruit employees who have experience of this. Second, the HR department's learning capability is defined as the ability of the human resources department to identify any weakness in the knowledge, skills and abilities (KSA) of employees. This information should then be used to provide the most effective and suitable training programmes to cover these gaps (Ganco et al., 2020). HR learning capabilities are found to have an effect on the adoption of technology in the workplace context (Hernández et al., 2021). Thus, this research proposes that the HR department's capacity in terms of enhancing employees 'skills and structuring communications among and across departments is an important factor in improving the success of Digitalised Cloud Services. Accordingly, this research argues that the HR department's capabilities in learning and recruiting are essential for the successful deployment of the digitalised cloud service.

Proposition 4: HR capabilities affect DCS Success positively

4.2.2.3 IT Management Capabilities

The second functional capability required for improving the successful adoption of digital cloud computing services is IT management capability. This refers to a set of routines to initiate, plan, and deliver IT projects successfully (Zhou et al., 2008). Thus, the capability of the IT department capability translates into four practices (Chen et al., 2015). These are the effectiveness of IT planning, IT project management practices, the consistency of IT policies, and the evaluation of the new IT investments. These practices are referred to in the literature and help enable the organisation to successfully select and implement

suitable software applications (Bharadwaj, 2000). In addition, it improves the users' perceptions towards the reliability, quality, and responsiveness of the service (Xiao & Hedman, 2019). Therefore, it is proposed that having IT management capability will increase the success of digitalised cloud services.

4.3 Improving DCS Model (Interview Research)

Section 3.4.2 reported the interview participation for the DCS research. Word analysis of the interviews shows that they were dominated by keywords such as "access", "storing", "sharing", files", and "documents". These keywords could reflect the nature of the digitalised cloud services.

Figure 4-2: DCS Visualised Text Analysis

The digitalised cloud services system can be defined as the technology used by organisations and individuals to save, edit, collaborate, and send information in sync mode. The first expert-defined it as follows:

> *"A remote storage capacity which provides both primary storage and backup of files allowing file sharing and collaborative working on files including automatic links to files saved on the laptop/desktop" Expert 3*

The data are stored mainly on the cloud and on computers to enable the work to be done in either offline or online modes. Once the data are in the cloud, they are accessible anywhere and at any time.

"A paid for system which holds your data on a central 'cloud' system so it can be accessed from any computer system globally once you pass the correct security system." Expert 2
"It also does not take up as much storage space on the computer as it can be either web based or can be linked to your own files on your computer so they can be saved there too." Expert 4

The ultimate goal of investing in this platform is to digitalise the organisation's documents and data:

"Well, in principle, it is average. SMEs are all trying to digitalise." Expert 6
"We used to work manually. But we have reached where we needed to make a shift in the way we work by setting all documents on the cloud" SME 2

In the next section, this group of cloud computing applications is described in terms of its technical features and the organisational complementary resources required to ensure its optimisation, and the effort businesses will need to make to accommodate these resources, which in turn can improve the business value from such investments (i.e. business success).

4.3.1 Technical Resources

This group of cloud computing applications contains seven different resources that can be combined to deliver the required business success from the investment in this technology. The characteristics, as shown in Table 4-1, are an Accessible Centralised Secured Storage System and unstructured data with track changes features.

Table 4-1: DCS Technical Resources

Theme	Sub-theme	Description
Accessible Centralised Secured Storage System	Centralised	Storing data in a known place that is accessible to who have permission to access.
	Digital preservation	The data are accessible and preserved for long period of time; unlike the written documents which deteriorate over time.
	Automatic backups	It automatically saves the data on the cloud to prevent data loss.
	Physical Hazards	The data are saved on the cloud which protects them from damage or fire hazards.
	Simultaneous Accessibility	Data and company documents are accessible from anywhere by many persons at the same time.
Unstructured data		This level is dominated by unstructured data such as word files, excel sheets, power point presentation. No predefined templates to regulate employees' behaviours as they are mechanisms for exchanging unstructured data.
Track Changes		Different participants can collaborate simultaneously with tracked changes feature to set accountabilities and responsibilities over tasks.

4.3.1.1 Accessible Centralised Secured Storage System

The first main technological resource of this group is accessible centralised secured storage. The first keyword is accessible. The value from the centralised secured storage is unlocked due to the accessibility feature. If employees do not have access to the data at a convenient time and without too much effort, this will undermine the potential value of the storage cloud system. Thus, as noted by interviewees, the most important feature of the DCS system is to be accessible anywhere and at any time as long as there is a real business need for employees to use these data.

> *"Google business suit serve the intended purpose and we are happy with the program, everyone here work on the same sheet at the same time and that would give us the accessibility wherever we are." SME 1*
> *"Everyone has access to the system over the internet and can access the software from anywhere with an internet connection." SME 4*
> *"There are many advantages of cloud storage such as it enables you to access your data from anywhere in the world providing you have an internet connection". Expert 1*
> *"Dropbox, we use to store large files to give people access from anywhere" SME 10*

Firstly, this cloud system accessibility feature can be extended to enable simultaneous sync. In other words, it enables different people to collaborate on the same file at the same time.

> *"It works well. It allows many people to access documents simultaneously, for example all have access to a certain guidance document that can be updated and edited easily and instantly so that we are all working with the most up to date document." SME 6*
> *"Applications SMEs pay for to allow many employees/users to simultaneously access the same business data. All managed remotely". Expert 5*
> *"Everyone can see the most up to date version and **can make any changes without having to save a new version**." SME 8*
> *"We can share documents so multiple people can be contributors. This allows the document to always be a 'real time' version". SME 9*

The second feature is centralisation, as all data can be stored in a central place where everybody can have access to it whenever they are needed, as long as they have the necessary permission.

> *"Google drive. All documents, policies and planning are stored here. This can access remotely." SME 8*
> *"We use one drive in our business for storing and sharing files SME 11*
> *it allows you to send unlimited documents of unlimited size to various people in a secure manner." Expert 2*
> *"Data storage across a network of computers provided by a third party; storage is wherever there **is a suitable location rather than on a specific computer**. Accessible from anywhere, subject to internet access and **normal password security"**. Expert 7*
> *"Yes. Secure. **Easy to find documents**. Multiple contributors. Sharing is easy." Expert 4*

The third aspect is offering security in terms of protection from hackers, damage, or theft from premises. Compared to offline storage, online storage is more secure and offers more protection.

> *"A location to keep data secure as opposed to hard drive storage, which is more prone to hacking, etc." Expert 3*
> *"Yes, makes losing files a thing of the past. Also feels more secure as you don't have to have a memory stick etc. Easy to pick up work at home". Expert 9*
> *"We use the platforms as a way to store valuable and sometimes **confidential data securely** and in a way, that staff can access easily when needed". SME 8*
> *"I believe so as it provides more reassuring security, and as far as I am aware there have been no breaches in terms of data loss and unauthorised access." SME 6*
> *"It's a success as anyone can access a file and it's more secured as its security doesn't depend on one person's laptop." SME 12*
> *"It prevents having a single point of failure in the event of a cyber-attack" Expert 1*

A secure storage system can be accessed by a virtually unlimited number of people at the same time, but with possible restrictions given according to the information policy available in the workplace.

> *"SharePoint I would define as being secure storage for high volumes of documents and folders for a large amount of people to use, even at the same time" Expert 3*
> *"A system where you store data online that is secure and **accessible only by those with access"** Expert 5*

It also avoids the risk of data being lost or destroyed due to unintended actions. For instance, many organisations turn on the automatic backup system to ensure that all employees' data and records are stored automatically on the cloud.

> *"OneDrive Automatics set to backup all documents on our laptops to Pevsner data loss" Expert 4*

Indeed, one of the SMEs defined this as a mechanism to protect data stored remotely on the cloud.

> *"Remote storage that prevents loss if your pc is damaged" Expert 9*

The last interesting characteristic is the duration of the preservation. While manual documents can be destroyed over time due to the handling process, digital data can be preserved for more than ten years and easily accessed without any deterioration in their quality.

> *"Documents have been stored for over 10 years and are secure and still visible without corrupting" SME 13*

To sum up, the main benefit of DCSs is the provision of an accessible centralised secured storage system.

> *"A cloud storage system (for example, Google Drive) allows people across our organisation to store data online on the internet. This means that documents can quickly be shared with others and data can be backed up easily - which means that even if I'm swapping devices, I can access my data from anywhere (for example, from mobile to desktop". SME 11*

4.3.1.2 Unstructured Data

The second resource that characterises DCS is dealing with unstructured data. Examples include Word and Excel files. This unstructured form of information collection is important in order to provide flexibility in the workplace, allowing employees to design their own templates without the need for the IT manager or programmers.

> *"One Drive Share Point Using this gives me free data which is accessible outside of work." SME12*

However, users are required to design their own templates for regulating the work process.

> *"Number of templates and reports vary and might be slight confusion between employees as there are no one standard way of working" SME 20*

The unstructured data includes not only written documents, but also video files. It can be challenging to archive these using a manual system or one that is not in the cloud.

> *"One drive is used at my workplace. It is used to send multiple/large files and videos to another in one file" SME 3*

4.3.1.3 Version control (Track Changes)

The last resource available in this set of technologies is the version control feature. Version control can be used to track who did what and when. This can improve the sense of responsibility and accountability in dealing with organisations' knowledge resources.

> *"SmartSheets. I think it is successful, it has much lower levels of errors than using files saved on the network drive. Plus it also keeps track of who made changes and when." SME 4*
> *"All work is done and saved to the one drive, so that anyone within the organisation* ***as access and can edit.*** *All information is sorted* ***here for safety*** *and to* ***keep us accountable****. It also allows for many people to* ***contribute to the same written report"****. SME 16*
> *"It allows us to keep* ***version control*** *so that we know which version of the files* ***everyone should be working to".*** *SME 18*
> *"It also means that we can keep version control up to date even though many people are using the files". SME 2*

Although this resource is important, it is not available in all applications and is not well-known.

> *"We bought a specific application to allow us for assigning different permission rights and access. It has been successful for our Trust in that users can access all the relevant platforms, documents and policies remotely" SME 12*

4.3.2 Requirements

The proposed requirements for the successful delivery of DCS described in the literature are organisational effort, individual effort, Internet speed/infrastructure issues, and service provider efforts. Validation with experts in the Saudi SME context led to the Internet speed issue being rejected and amended the other three efforts.

4.3.2.1 Service provider efforts

The service provider is defined in the literature as the most important factor in the successful delivery of DCS. Experts found it to be important, but not the most important factor. It is important, as defined in the literature, because it offers confidence and trust in applications. However, according to experts, because service providers are global and well-trusted by everyone, this issue is not presumed to be the most critical factor at this level.

> *"Yes, it is used the world over. Millions use google it is a great system and one drive is ok too. All global vendors have the same credibility" Expert 3*
> *"Google business suite are well known and trusted, they have a quick reply, most companies around us work on it" SME 11*

Organisations need to decide whether to use Dropbox or OneDrive. OneDrive is more integrated and compatible with Microsoft applications, which needs skills that are available in the recruitment market, while Dropbox does not have the same level of compatibility with MS applications.

> *"We went for OneDrive because **it is part of Microsoft 365 package**." SME 15*
> *We use **One Drive linked to MS 365** for all operational work - including working collaboratively and backed up by MS Teams in an integrated system.*
> *"**One drive with access to office 365**. Also started to use Microsoft teams where files can be uploaded and edited. I can save files to this on my work computer and then access at home and edit. My company does not use Drop box because it is hard to be integrated with Office 365. Personally I have used Dropbox for a number of years, but this is independent from my organisation and is not supported by them." SME 13*

In the same way, some experts consider that Google Drive is relatively cheaper but less reliable than OneDrive, whilst others believe that Google Web Toolkit works better together than MS applications and are compatible with the Google mail system.

> *"I prefer to use my One drive linked to my work email. I use both systems to save my files, photos, presentations etc. I can also share my files from the cloud." SME 7*

Whilst this research did not find hard evidence regarding which factor is the most important; experts differed in opinion as to whether migrating from system to system could create challenges and reduce confidence in the applications. Thus, the same items were kept, but words like "professionalism, delivery on time and closeness to the workplace" were dropped from the service provider criteria because they are not relevant to the nature of the DCS offered by global providers. The existence of physical locations in Saudi Arabia is not relevant, and there is no need for professionals or consultants from service providers. Therefore, as summarised in Table 4-2, the focus here was on the perception of reliability, quality, and responsiveness when facing challenges.

Table 4-2: Service Provider Items

Sub-theme	Description
Reliability	this is comforting me a lot because they cooperate with you, the response is fast, we don't often saw problems from this thing because honesty cooperation exists, big fan of google.
Quality	the employee I have contact Google and they give them solutions I mean the solutions I mean the time they said at the speed of completion.
Responsiveness	in general, google docs are well known and trusted, they have a quick reply, most companies around us work on it.

4.3.2.2 Individual efforts (Customisation and configurations)

Customisation is not the duty of the IT managers; rather, it is the duty of the employees to create new interfaces to receive information from others and to design new reports to send information to another department. Unlike other cloud applications, there is no database connected to the report design or data receipts. Therefore, each employee designs a form to collect information using simple digital tools such as a Word file or Excel spreadsheet to ask for assistance with filling in forms. Similarly, each employee is required to use aggregating tools (e.g., Excel spreadsheets) to carry out the analysis and produce their own report using their own style or format.

> *"We use a cloud based Google drive software to keep track of bookings/stock management and invoicing. We need to structure the data forms for this function" SME 13*

The design of the forms to collect information or to produce reports can be done individually (i.e., each employee produces his or her own instruments) or can be institutionalised (i.e., with a centralised excellence centre to develop them). They are not developed by the IT department because more business-related functions are involved. The focus of this research is on SMEs, which do not have easy access to centralised centres of excellence. Therefore, it is presumed in this research that the individualistic approach is the main one.

Thus, the proposed approach to improve affordability is an examination of the perception of the efforts required to customise interfaces and reports in cloud storage applications. For example, the head of the department or the salesperson is responsible for sending structured Excel spreadsheets to their employees or clients to fill in. These structured spreadsheets can be completed using a simple page design or using Visual Basic macros to enable validation characteristics of the field to prevent mistakes (i.e. number fields accept only numbers, postcode fields accept only predefined text). These mechanisms can facilitate the use of cloud storage applications to streamline business processes and enhance communication between team members and across departments and organisations.

> *"Purpose but I mean we are happier than we were before manually. Communications now are systematic once we established the right templates for reporting and communications' SME 16*

The level of customisation is indexed through the number of communications and templates that need to be adjusted each time to initiate new interactions (i.e. new vendors, customers, or employees) or new activity (i.e. buying and selling items, or payroll). It takes some time and effort to adapt to using each of Excel or Word files and to customise them to fit with the business requirements. The level of programming required to set up each file (e.g. Visual Basic macros), the level of customisation of the report (i.e. the perceived effort to design the page layout, headings, and fields, masking of the fields for verification, and formatting colours and fonts), the number of reports (to disseminate information), number of customised interfaces (i.e. Excel spreadsheets used for data entry) and the level of effort to customise the interface need to be measured.

> *"We do design reports, template, page layout and formatting colours and fonts for most bossiness related activities." SME 1*

The level of customisation required to fit the work demanded can be regarded as a "work effort" required to perform the job. According to the Theory of Reasoned Action (Fishbein, 1980), the perceived "work effort" to complete the task can hinder the adoption of the technology. Similarly, if the level of the work required to customise the interfaces for each new communication with stakeholders is perceived to be overwhelming, this increases the likelihood of adverse attitudes to DCS use and adoption.

4.3.2.3 Organisational efforts (Skills, practices, communication)

As defined in the literature review, the third requirement for the successful assimilation of digitalised cloud services is based on the efforts made by the organisation to recoup the benefits. It was found that this group of applications offer unstructured data platforms that require regulation.

> *"Number of templates and reports vary and might be slight confusion between employees as there are no one standard way of working" SME 12*

Thus, to unlock the required benefits, effort needs to be made to change business practices. The proposed changes that organisations need to make if they are to adapt to using unstructured digital platform systems involve improving employees 'competence and communication across and within departments. Regarding improving employees ' competence, the amount of the organisation's effort will depend on the gap between required and desired skills and any discrepancies between the current and desired workplace. Communication systems within and across departments may need to be adapted to fit in with the use of DCSs; the amount of change needed may vary.

> *"Training on the use of the Google docs because you know the skills required in this company, we have specifically did need people to bring ideas in the application, reports, and reporting" SME 18*
> *"Honestly, the young men here, what God wills, do most of the things with me they are active energetic and quick learners." SME 19*

Although it is assumed the design of reports is an individual rather than institutional effort, SMEs' lack of resources means that aggregated individual efforts to change reporting and design computerised reports are an organisational requirement. Thus, employees' skills and practices, as well as communication within and across departments, are important when assessing how to fulfil the organisational requirements necessary for the successful implementation of cloud storage applications.

4.3.3 Capabilities

It is noteworthy that the technologies were perceived to be affordable, and do not require the organisation to make substantial financial investments.

> *"The cost of PBCS and ECS technologies are expensive for small companies because they pay for license and maintenance fees, whereas these storge apps are affordable which make it commonly used in the SMEs levels" Expert 9*

This research proposes some methods of dealing with the requirements for the successful delivery of DCS. These are human resources capabilities, absorptive capacity, and information technology.

4.3.3.1 Human Resources Capabilities (Learning)

As confirmed in the literature, the first capability required to deal with the expected effort to assimilate the use of DCS is a functional one related to the HR department. The proposed HR capabilities of the HR department are learning and recruitment. In the literature, recruitment was found to be important, but this does not apply to the Saudi context because graduates are very familiar with these technologies. There is no real need for job applicants to highlight their knowledge of Excel, Word, or other DCS applications. Most Saudis are now very familiar with Dropbox and other cloud-based applications.

> *"We were looking for people with basic experience in Excel specifically. and thank God quite easy to find we got and then those who we already experienced here we ask them to give the training to those to familiarize themselves with the way we work, I mean we saved capital" SME 10*

However, learning capabilities are still required because general knowledge about these applications is very different from what the business needs. For example, Visual Basic add-ons are rarely used for personal use, but are required for some business purposes. Therefore, the HR department needs to know about employees' weaknesses and strengths in order to provide them with the required technical skills to fulfil the requirements of their job.

> *"Edrm which is an electronic filing system with individual access to it. Our system was not successful as it was not user friendly enough for the less skilled and the system had too many variables and was not locked down enough. User log ins were also not disabled when staff left so posed a security risk." SME 17*

HR learning capabilities have been found to influence the effect of individual efforts in terms of mastering the customisation skills needed to embrace the use of DCS on a day-

to-day basis. This requires HR departments to assess current training needs by examining the gap between the current and expected KSA, and to deliver suitable training packages. One of the mistakes that has been noted and which needs careful consideration and training is "how" and "when" to sync, namely, to avoid syncing old files or overriding updated ones.

> *"They are mostly successful and allow quick, remote collaboration but can have glitches like when documents don't sync at same time for all employees or when someone accidentally syncs old documents on server" SME 3*
> *"OneDrive - I don't find it very reliable as have had some employees work deleted randomly. Or times where it tells me the work has saved but it hasn't." SME 6*

Without appropriate training on the use of the cloud-based systems, the workplace may become less regulated, leading to data redundancy and duplication of files in different folders.

> *"I think we could have more structure and some staff may require additional training. For example, staff use many different platforms. I would like to see staff all using the same platform and merging all our information in one place". SME 14*

Training is crucial to safely ensure a smooth transition from manual or other systems to new systems.

> *"We use One Drive. We use the system to save important documents and then upload back into complex case record systems. We moved over to this system approx. 3 years ago. Originally, I found the new process difficult to use as I was so used to the previous way of working but now find it really helpful and useful". SME 2*

Similarly, the organisational effort required in terms of enhancing employees' skills and structuring communications among and across departments involves the adoption of new business practices. These require different types of KSA to those currently used without DCS. Therefore, HR learning capability could help in educating employees on the new structures, collecting requirements for appropriate communication, and ensuring that employees are equipped with the required knowledge to carry out the new practices and derive the maximum value from the use of DCS.

4.3.3.2 Absorptive Capacity (Acquisition)

The organisational capability required here mainly involves picking the right application without the need to replace it in the near future. This is a complicated capability because the organisation collectively needs to decide which application to buy. SMEs do not have access to the financial resources needed to employ consultants to advise on the right

application. Thus, a significant number of employees must be able to work together to reach a consensus on the most suitable application to use. This will not be possible without organisation-wide policies to motivate employees to take part in this process.

> *"Our company gather mostly everyone in the institution in a regular monthly meeting where ideas are shared. It was our decision to pick google cloud" SME 5*
> *'We had a meeting to pick a provider and so we found Drobox would match our needs'. SME 9*

Thus, experts agree that the effect of the service provider requirement will be improved as a result of the organisation's acquisition capability.

4.3.3.3 IT Management (Excluded)

IT management was not found to be significant for this group, as the experts advised that the process of deploying these applications is usually done by the owner or by accounting specialists. The IT role is minimal in the deployment process because these applications are, by nature, free of mistakes or bugs. No technical skills or knowledge are needed to install them, especially at the level of SMEs. The main accountability is for employees and providing support for them from accounting specialists or any person with sufficient knowledge of these aspects is necessary.

> *"I'm not very technology minded! staff have access to important information and have the ability to share things with other staff" SME 3*
> *"We have reached where we needed to make a shift in the way we work, thus we are using OneDrive, quite straightforward, simple and efficient without a need to invest in IT department" SME 15*
> *"Well, the employees made the template as you know these apps are self-learner, so we didn't really need he made was not well prepared there they have a way of having a way of being placed in the IT section" SME 7*

4.3.4 Business Value

DCS was found to be highly successful for SMEs due to its cost, easiness of deployment, and flexibility and security. Out of the 20 SMEs interviewed, only three disclosed that it was not very successful. All interviewees believed the deployment was very successful and had positive outcomes, which will be described in the next section.

> *"It's **a great success**. I didn't trust these systems previously and would normally rely on zip drives to transfer files between locations but now **I am almost totally reliant on OneDrive"** SME 3*

When the interviews were asked about the definition of success, the usefulness and ease of use (sometimes called convenience) are the best words to summarise the users ' intentions and satisfaction, and also indicate positive outcomes.

> *"I think my personal experience has been successful. It has been **easier to use**, it doesn't clog up available space on the systems **that I use** and is, it is stored securely" SME 15*
> *"Yes -it's so **convenient**, especially during the past 18 months. this has been great and now pretty much everything is done on the drive now and **sharing** etc is just so **convenient"**, SME 1*
> *"I think it is successful and makes work more **efficient,** one thing I like is that you **can share** files with other users then both work on the document files at **same time** and see **easily** what the other user is doing" SME 16*
> *"Yes, it's successful. It works well for us, it's **reliable**, **fast** and **easy to use"** Expert 13*
> *"Yes, I believe it has been successful so far. Success is defined by the **easy availability of the data** and **ease of accessibility** to this data for all my team members irrespective of their location". SME 10*
> *"I am **satisfied** with, it (OneDrive) serves the purpose although is not the whole purpose, but I mean we are happier than we were before manually" SME 12*
> *"Overall they are **good** and **fit for purpose.** I define the success of a cloud system by how easy it is for people to use and how well it works" Expert 8*
> *"It is easy to use, easy back up system, I believe it is successful" SME 17*

4.3.4.1 TAM

The definition of success, when expanded, thus includes six keywords or phrases. These are: usefulness, ease of use, fulfilling needs, satisfying users, used by staff, and leading to positive outcomes.

> *"I definitely think it's successful. For me success is defined by getting the **best possible working** in the **easiest or simplest way**. I think this allows more **collaboration** between colleagues and decreases the amount of confusion that multiple files can cause so being able to view and work in files at the same time has proven **really useful**. It also acts as **a safety** net so if files are deleted, they can be recovered and if there are any system outages it does not usually affect the web-based systems and therefore keeps **working as smooth** and seamless as possible". SME 2*

4.3.4.2 Benefits

The success here is always connected with technical resources. In other words, unstructured data offers freedom for creativity, security for safety, sharing and communicating, and simultaneous accessibility for collaboration, communication and working from home.

4.3.4.2.1 Communication

The first business outcome is improving the efficiency and effectiveness of the communication process. Before the adoption of cloud systems, the traditional approach was to use a memory stick or emails. Emails and memory sticks have the risk of viruses and sending and receiving files at different times may mean that collaboration is not simultaneous or synchronised. The use of cloud computing removes time barriers and eliminates the risk of spreading computer viruses when exchanging memory sticks.

> *"A cloud where you can upload files and documents for others to reach live copies I think fairly. It has reduced the number of emails sent within a day" Expert 13*
> *"MS365 Enterprise-wide systems to deliver the business. It speeds up communication and interoperability" SME 14*
> *"Google Drive - we use it to share **mainly Excel spreadsheets** to keep a running **update** of projects as they move through the workflow" SME 5*

The benefits of revolutionising the communication process from the physical exchange of memory sticks and using emails to the simultaneous synchronisation of data and information extend to include communication with the external stakeholders (for example, customers and suppliers). Secure tracked storage systems enable organisations to share data and allow external stakeholders to amend files without the risk of exchanging viruses or sending so many emails. They can also share files on public storage systems such as 4shared or YouTube.

> *"We use Dropbox and Google drive regularly to share large documents with third parties securely" SME 10*
> *"Google drive and use it for individual and group sharing of documents outside the organisation" SME 8*
> *"We use OneDrive to store our intellectual property in terms of designs and illustrations. Our clients have access to relevant files. Our design and illustration solutions are stored in the cloud. Each team member has access to these files which can be developed remotely". SME 2*
> *"Yes, it allows us access particularly for large video files so anyone can use them while at a client or off site without needing to carry file storage or other devices and allowing us to not need to host these somewhere public" SME 17*

4.3.4.2.2 Collaboration

The second business outcome from the use of DCS involves improved collaboration capabilities for SMEs. Improved accessibility, the use of unstructured data (freedom), and tracked changes (setting accountability and responsibility) allow staff in SMEs to collaborate more effectively than before.

*"I think overall our cloud storage system is **successful**. I would define success as people being able to **access** their data **on a daily basis** and be **able** to **share** documents with others. We're **able** to **collaborate** on documents as well which is **important**." SME 18*
*"We use Google Drive for sharing resources, data collection, **working collaboratively**" SME 19*
*"Yes, I define success by everyone being **able** to **access** the same items **and work on them collaboratively** at the same time. We have many spreadsheets **organising productivity** and staff availability that different teams **are able to access** and work in at the same time." SME 4*
*"I would say it is a success as there **has never been any issues** with **accessing** the files and it has **allowed** improvements in **access** and **collaboration"**. SME 13*
*"SmartSheets. It's an online tool that **allows multiple users** at the **same time** to **edit** spreadsheets. Systems **that I access** via the internet rather than installed on my work laptop." SME 9*

Some SMEs refer to DCS as "collaboration tools", indicating that the ultimate purpose of investing in them is to improve collaboration between organisation members.

*"The **collaboration tools** are excellent and help us to work as teams from multiple sites on projects. Having full integration with MS teams has changed the way we work for the better and removed the need for our own data services sites and backup." SME 7*
*"OneDrive is to store files and work **collaboratively**" Expert 1*
"One drive is in standard use both for individual storage and for collaboration" Expert 9

Unstructured data can boost collaboration and creativity:

"In the other hand, using google docs gave us the opportunity to be creative with our template and thus the collaboration was on point" SME 18

4.3.4.2.3 Working from Home

The third noted positive outcome of the use of DCS by SMEs involves making it easier for employees to work from home. Indeed, one of the main reasons why SMEs are motivated to implement DCS has been the pandemic and the enforcement of home-working laws.

*"We have a system in work too, but had been gradually migrating to everything on Google Drive prior to the pandemic**, during lockdowns not always physically being in work"** SME 11*
*"It is **successful** as it has allowed us to work effectively through the **pandemic** when we are **required by law to work remotely"** SME 19*
*"It **is successful as** for the majority of the time people are able to **access** the remote desktop wherever they are in the world which has been **especially useful during a global pandemic."** Expert 4*
*"Yes, it works very well for us - it has enabled us to **work effectively on a remote basis from multiple sites during the pandemic."** SME 15*
*"I was initially wary but due to the **pandemic** and needing to **work from home** I now do everything via our cloud systems" SME 4*
"It's very successful especially since Covid lockdowns" SME 18

There are different reasons for this, first, and foremost of which is the secured accessibility of the data from anywhere and at any time.

> *"It means we can share files for others to look at which **has been very successful** since we are all **working from home**. We have been able to function as a company **because** our **files have been accessible to everyone**." SME 19*
> *"I had saved something onto my work computer and not on One drive. Not only was I not able to access this when working from home during the pandemic, I also lost it for some reason when I did try and find it when back in work". SME 6*

Second, the secured accessibility meant that SMEs' experience of working from home was similar to working in the office because all of the required files were available with the same level of detail and information. Employees did not need to come to the office to take any documents or files home in order to complete their tasks.

> *"Yes, I have **access** to the same files and documents at home and in the office. This has become extremely important since I **have been working from home**. I have exactly the **same experiences at home** as I **have in the office**. This allows me to complete all necessary tasks regardless of the location I am in. I am also able to work on documents simultaneously with colleagues located hundreds of miles away" SME 14*
> *"Our systems are successful. We have members of our team who are living and working remotely now in Covid-19 times and can still operate as normal. Information stored is accessible as and when needed to all members of our team together with our clients". SME 11*

Not only do employees have access to data, but the use of DCS, as summarised in Table 4-3, also empowered collaboration and interactivity with teams who were working remotely during the pandemic.

> *"Accessibility is good, especially as most people have been working from home. Useful for collaboration on shared docs." Expert 13*

Table 4-3: DCS Perceived Benefits

Objective	Working from home as a business objective
Enabler	Secured accessibility for working from home
Outcomes	Working from home effectively and efficiently
Benefit	The same experience of working from home as working in office
	Collaboration with team members working remotely

4.4 Examining DCS model (Survey Research)

After the interview research, there are five main hypotheses to be tested. These are the effect of HR learning capabilities, acquisition absorptive capacity, organisational requirements (skills, practices and communications), service provider and individual requirements (customisation and configuration) on the success of the adoption of DCS.

The questionnaire was distributed to 158 SMEs in Saudi Arabia that has implemented DCS. The following section describes the questionnaire design and the measures taken to ensure its validity and reliability. The constructs were found to be valid and reliable and were thus used in the analysis. The following section presents the descriptive data for the sample, and the last section assesses the model fitness and the results of the testing hypotheses.

4.4.1 Questionnaire Design

The questionnaire (Appendix A) was developed from the literature review (Section 4.2) and improved by carrying out interviews (Section 4.3). There are five research constructs: success, organisation requirements, individual requirements, HR learning, and acquisition. Success is measured by seven items: ease of use, usefulness, most employees use it, "I use it most of the time", most of the employees are satisfied with it, it gets the expected ROI, and "my organisation sees it as an asset" (Badewi, 2021). The scale found to be reliable was Cronbach Alpha (.92), Composite Reliability (.937), and Rho_A (.927), which exceeded the cut-off point of 0.6 (Bacon et al., 2016). It was also found to be valid since the factor loading of the items for each construct was more than 0.6, and the Average Variance Extraction (AVE) was .68, which is more than the cut-off point of 0.5.

The second construct is learning by human resources departments. This was measured by three items based on the findings of the interviews: the ability to deliver appropriate training courses, the effectiveness of responding to training needs; and knowledge of effective training. This scale was found to be reliable because Cronbach's Alpha (.84), CR (.84) and Rho_A (.90) were more than 0.6 above the cut-off point. It is also valid as the AVE (.76) is more than 0.5, and all factor loadings of the items constituting this construct are more than 0.6. There were two items for acquisition capacity, based on the relevant literature (Miroshnychenko et al., 2021). These were: "the search for relevant information concerning our industry is the everyday business in the company" and "our management motivates employees to use information sources within our industry". This scale was found to be reliable because Cronbach's Alpha (.69), CR (.70) and Rho_A (.86) were more than 0.6 above the cut-off point. It is also valid as the AVE (.767) is more than 0.5, and all factor loadings of the items constituting this construct are more than 0.6.

The fourth construct is measured by three items: employees' skills; reporting across departments; and employees' practises. This scale is found to be reliable because Cronbach's Alpha (.904), CR (.921) and Rho_A (.94) are more than 0.6 above the cut-off point. It is also valid as the AVE (.838). The last construct is the individual effort, as measured by three items from the interview findings: the level of configuration of the system (i.e., changes in the field interface); level of reporting customisation; and number of customised reports and interfaces. This scale was found to be reliable because Cronbach's Alpha (.88), CR (.89) and Rho_A (.93) were more than 0.6 above the cut-off point. It is also valid as the AVE (.81), as shown in Table 4-4.

Table 4-4: Confirmatory Factor Analysis (CFA) for DCS

Construct	Items	Loadings	a	Rho_A	CR	AVE
Success Factor	Easy to use	0.722	.92	0.92	.93	.68
	Useful	0.855				
	Most of employees are using it*	0.877				
	I use it most of the time*	0.854				
	Most of employees are satisfied with it*	0.890				
	It gets the expected ROI	0.775				
	My organisation sees it as an asset	0.785				
HR Learning	Ability to deliver the appropriate training courses.	0.831	.84	.90	.84	.76
	Effectiveness of responding to training needs.	0.902				
	Knowledge of effective training.	0.892				
Acquisition Capacity	The search for relevant information concerning our industry is everyday business in the company.	0.887	.69	.86	.70	.76
	Our management motivates the employees to use information sources within our industry.	0.864				
Organisation Requirements	Employee's skills	0.944	.90	.94	.92	.83
	The reporting across departments	0.931				
	Employee's practises	0.870				
Individual Efforts	Level of configuration of the system (i.e., changes in the fields interface)	0.895	.88	.93	.89	.81
	Level of reporting customisation	0.925				
	Number of customised reports & interfaces	0.889				

*Developed from interviews

4.4.2 DCS Descriptive Analysis

Descriptive analysis, as illustrated below, indicates that the most common aspect is the success of implementation, with a score of 4.39 and standard deviation of 1.73, indicating that the cloud storage applications are successful for SMEs. The second common aspect is the acquisition capability ($\bar{x} = 4.37, \sigma = 1.69$) because of the flexible nature of SMEs. Both aspects have average scores significantly more than the middle point of the scale of 4: success ($\bar{x} - 4 = .39, P < 0.01$) and acquisition ($\bar{x} - 4 = .37, P < 0.05$). The lowest

score is for service provider, indicating that there is no need for the service provider, and it is not a consistent factor in explaining the success.

To examine the correlation with success, the Pearson test was conducted as in Table 4-5. The highest correlations with success in order are organisation, acquisition ($r = .544, P < 0.01$) and HR, while the lowest were service provider ($r = .319, P < 0.01$) and individuals' efforts ($r = .467, P < 0.01$). Although there were variations in the correlations among the proposed constructs and success, they were all positive and significant, indicating their importance. The correlational analysis is useful to explore the relationship, but correlation does not necessarily indicate causation. Thus, the following section is to assess the causation effect of the proposed constructs on success.

Table 4-5: Descriptive Analysis for DCS

				Pearson Correlation				
	$\bar{x}$	σ	$\bar{x} - 4$	1	2	3	4	5
(1) Success	4.39	1.73	.39**	1				
(2) Organisation	4.15	1.74	.15	.560**	1			
(3) Individual efforts	4.00	1.65	.002	.467**	.643**	1		
(4) Service Provider	3.76	1.80	-.24	.319**	.427**	.406**	1	
(5) HR Learning	4.00	1.76	.005	.544**	.514**	.323**	.128	1
(6) Acquisition	4.37	1.69	.37*	.544**	.411**	.307**	.303**	.637**

**. Correlation is significant at the 0.01 level (2-tailed).

4.4.3 Structural Model Assessment

The model fitness is accepted as SRMR 0.067, which is less than 0.1, indicating that the model is fit. The Chi-square was 471.134, indicating an acceptable level of model fitness. The R2 is 48.1%, as shown in Table 4-6. The direct analysis was conducted using Partial Least Square Methods (PLS) to avoid the issue of multicollinearity among the research constructs. All the factors were found to affect success, except for the service provider (.044, P>0.05). The highest effect was HR Learning (.293, P<0.01), followed by individual efforts (.234, P<0.05) as in Figure 4-3. The lowest two factors were the acquisition capabilities (.22, P<0.05) and organisation (.17, P<0.05). These results indicate that users are more important than the role of the organisation or institutional efforts.

Table 4-6: DCS Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Success (R^2=48.1%)					
Acquisition	0.220	0.219	0.076	2.887	0.004
HR_Learning	0.293	0.294	0.075	3.930	0.000
Individual efforts	0.234	0.242	0.092	2.545	0.011
Organisation efforts	0.170	0.168	0.085	1.989	0.047
Service provider	0.044	0.040	0.089	0.496	0.620

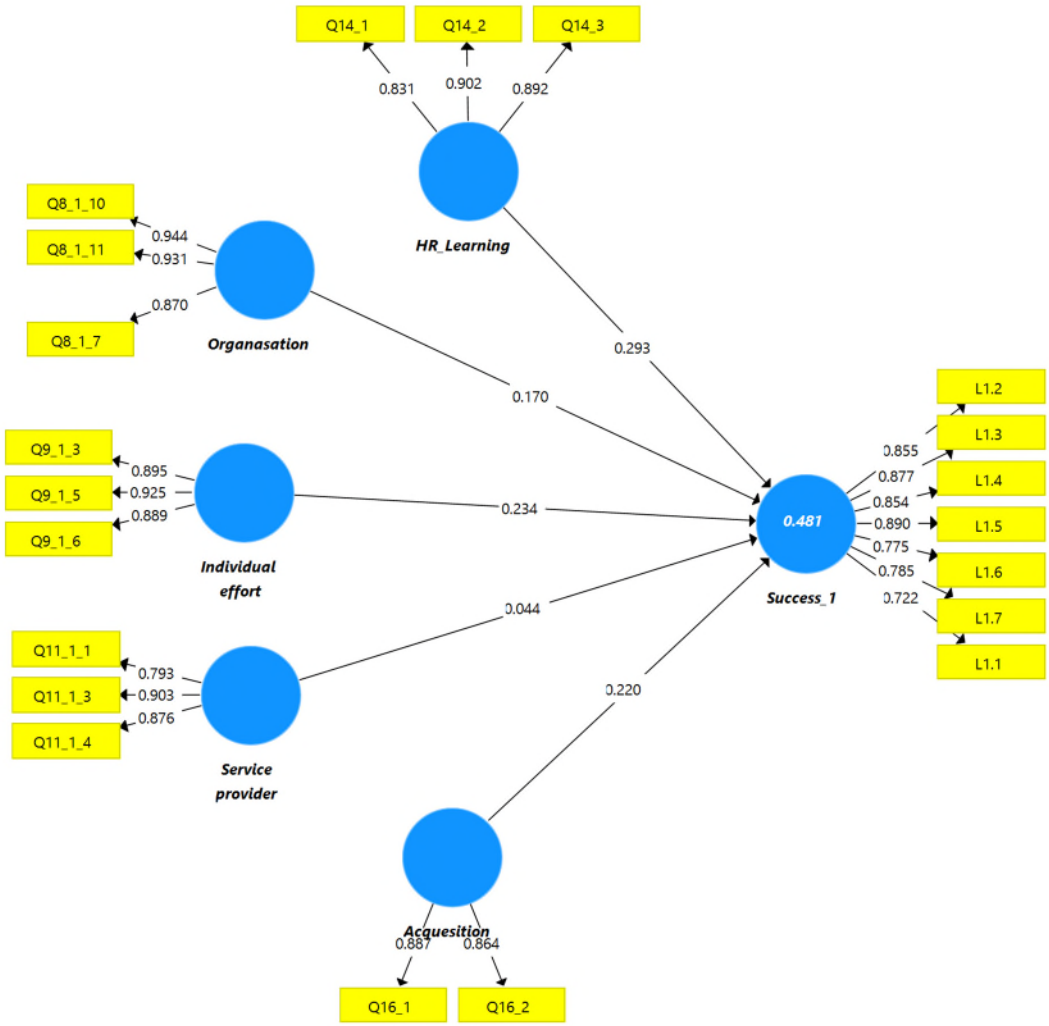

Figure 4-3: PLS Results for DCS (n=138)

4.5 Digitalised Cloud Services (DCS) Model

The final generic model for DCS developed from the literature consists of technical resources, capabilities, transformation requirements and success. As tabulated in Table 4-7, The literature review was used to examine and operationalise each of these constructs on digital cloud computing services. The interviews were used to validate these constructs, accept new constructs, and enhance the definitions. The questionnaire was used to test the final version of the examination of the effect of these items on success.

The literature provided an insight into the technical resources needed for the use of unstructured digital storage platforms for electronic communication and to retrieve data anywhere in the world. The interviews sharpened the definition to “an accessible centralised secured storage system which allows version controls”. The new definition arrived at after the interviews reflect the centralisation of data, digital preservation, protection from physical hazards, automatic updates and backups, and simultaneous access from anywhere with a level of control over changes to files and tracking amendments to the data. The questionnaire was not used to improve this data because of its qualitative nature and difficulty in quantifying or testing its responses.

The literature review was used to draw up a list of organisational and functional capabilities. The organisational capabilities were operationalised into acquisition absorptive capacity, while functional capabilities were defined as IT management capabilities and HR management capabilities (learning and recruitment). The qualitative research agreed with the literature on acquisition absorptive capacity, and the quantitative research found that it had a significant effect on the success of digital cloud services. The IT management capabilities were rejected in the qualitative research and not tested in the questionnaire. Qualitative research agreed with HR management learning capabilities but not the recruitment ones. The quantitative analysis found that learning capabilities had a significant effect on the success of digital cloud computing services.

The literature review was used to draw up a list of transformation requirements divided into organisational requirements and service providers. The organisational requirements were validated in the interviews and had a positive effect on the adoption of digitalisation cloud services. Based on the literature, the service provider was divided into reliability,

professionalism, quality, and responsiveness. After the qualitative research, this was narrowed down to reliability, quality, and responsiveness. However, the quantitative research did not find significant evidence for the effect of the service provider on success, which suggests that the service provider is less important for the adoption of the digital cloud services. Qualitative research added the new perspective of individual requirements to address the importance of the employees' willingness and capacity to customise templates and structure data usage in these applications to derive benefit from them. The quantitative analysis showed that this has a significant effect on the success of the digitalisation cloud services.

Success in the literature has been attributed to the simplicity of the applications and their ease of use. However, based on qualitative research, these are not simple as is presumed from the outside because their unstructured nature requires users to customise them. However, the flexibility gives the impression that they are easy and useful. In the qualitative research, the defining aspects and dimensions were improved significantly. Success is defined as ease of use and usefulness (TAM dimensions), and the benefits from the appropriate use of DCS. The benefits defined in the qualitative research are improved communication, collaboration, and working from home during the pandemic. The quantitative research improved the definition for the purpose of testing the effects on success. Thus, ease of use and usefulness were scaled based on Davis, 1989, the achievement of benefits translated into return on investment was scaled by Zwikael et al., (2018), and the achievement of benefits will never happen without the appropriate use of them. The “use” scale is adopted from Badewi et al., 2020 to indicate that respondents and colleagues in the workplace often use them.

Table 4-7: DCS Model Evolvement

	Literature	Interviews	Questionnaire
Technical Resources	Unstructured digital platform	Accessible Centralised Secured Storage System (Centralised, Digital preservation, Automatic Updates, Simultaneous access)	
	Unstructured Data		
	Electronic communication and cloud storage system		
		Version Control (Track Change)	
Capabilities	Organisational Capabilities: Absorptive Capacity (Acquisition)		
	IT Management Capabilities (Implementation on time and within budget)	XX*	

	the HR Management capabilities (Learning and Recruitment)	Only Learning is required	
Transformation Requirements	Organisational Requirements (Skills, Practices, and Communication)		
	Service provider requirements (Reliability, Professionalism, Quality, and Responsiveness)	Reliability, Quality and Responsiveness	XX*
		Individual Requirements (Customisation and Configuration	
Success	Simple	XX*	
	Easy to access and understand	TAM	One construct (TAM, Use, and investment success) indicating the benefits but from the organisational perspective)
		Benefits (Communication, Collaboration, and working from home)	

* XX indicates construct's rejection

The final model of all the three stages of research has the following five main constructs: technical resources; capabilities; transformation requirements; perceived benefits; and outcomes. The technical resources are an accessible, centralised, secured storage system that has unstructured data and methods of communication, but allows versions to be controlled by tracking changes in files. The capabilities required for these services to achieve the intended purposes are organisational capabilities translated into acquisition capability and functional capability translated into the HR learning capability. The transformation requirements are both organisational and individual. Employees' skills, practices and methods of communication will need to change to fit with new cloud services available in the workplace (organisational requirements). Individual requirements translate into employees' willingness and ability to customise and configure these unstructured flexible storage systems to standardise communication and data flow in the organisation to assimilate DCS efficiently and effectively.

The success of this group is split into perceived benefits and outcomes. The perceived benefits are working from home during the pandemic and improved communication and collaboration. These perceived benefits affect employees' behaviour in terms of improved usage of the application, perception of their ease of use and usefulness, and the benefit to the organisation by improving the return on investment on these services. The final model is shown in Figure 4-4 below.

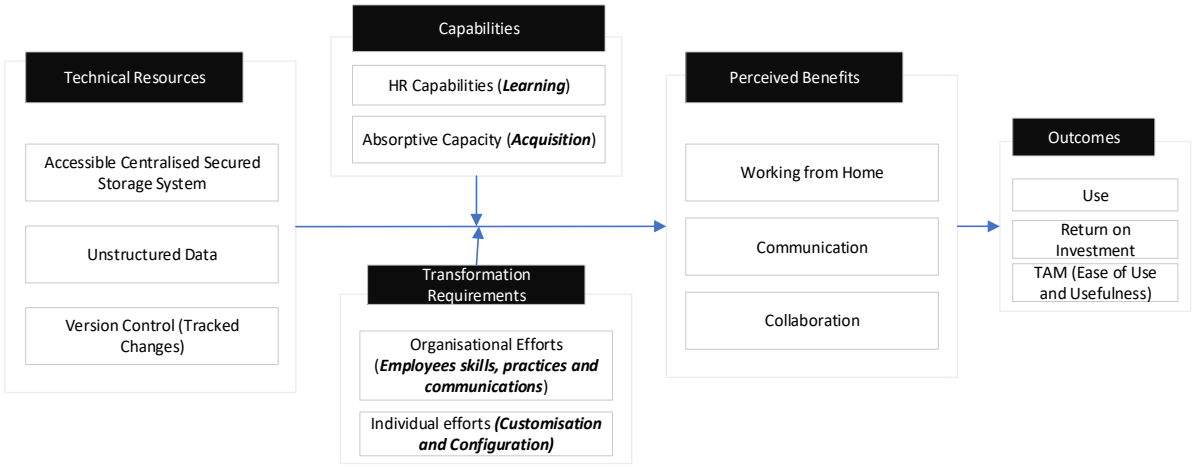

Figure 4-4: DCS Final Model

4.6 Summary

The aim of this chapter was to establish a roadmap for the SMEs interested in adopting digitalisation cloud services and those who are adopting them but not satisfied from using them. This research adopted staged based research, adopting a pragmatic research paradigm through triangulation of methodologies, to fulfil this aim. This chapter defined the technical resources of these services, which are the enabler for the success. It defined necessary capabilities (As-Is organisation routines) and transformation requirements (i.e., changes required to be in place during the adoption) that creates positive organisational perceptions towards these services in terms of benefits, ease use, usefulness, and ultimately the use that could improve return on investment. The next chapter will be on the other group of services (i.e., Packaged business cloud services).

Chapter 5 : Packaged Business Cloud Services (PBCS) Model

5.1 Introduction

Packaged Business Cloud Services (PBCS) are significantly different from DCS. They are structured per department and not customisable Thus, as shown in Figure 5-1, this chapter aims to delve into the literature to develop a theoretical model and propose its unique capabilities and the specific requirements to ensure successful adoption (Section 5.2). Hence, a theoretical model is developed first based on data from different countries and settings, interviews with experts and SMEs were conducted and the findings presented in Section 5.3 to improve the definition of the PBCS, and define the required efforts, capabilities, and benefits (business value) in the Saudi SME context. To generalise and examine the refined model, a survey of 130 SMEs in Saudi Arabia was conducted, and the results generated are presented in section 5.4. Finally, a summary of these findings is finalised and conceptualised in section 5.5 (the Model).

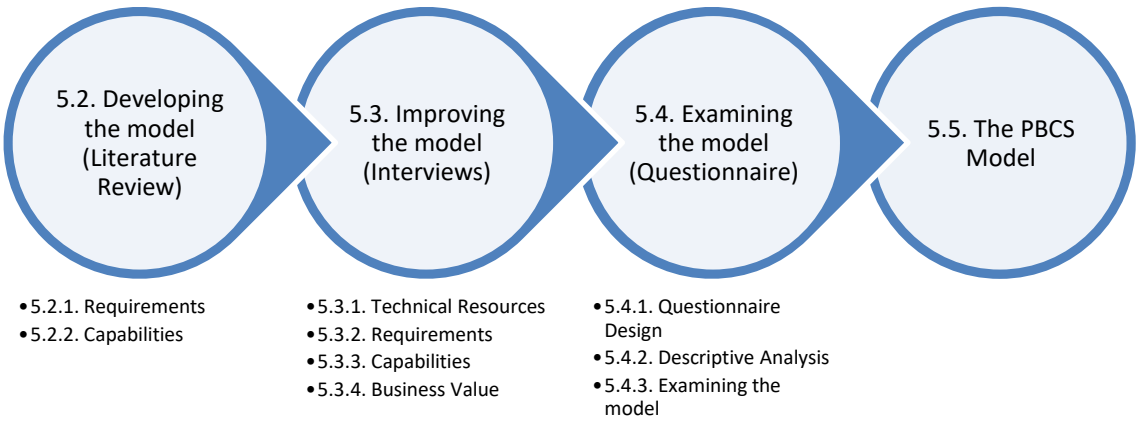

Figure 5-1: Packaged Business Cloud Services Structure

5.2 Developing the PBCS model (state of the art)

PBCS are off-the-shelf cloud services, each dedicated to performing or supporting certain functions. They include Customer Relationship Management (CRM) platforms, warehouse systems, or accounting systems. The chief characteristic of a PBCS is that it supports cloud storage, similar to DCS, affording accessibility anytime and anywhere that there is Internet access. It differs from DCS because it is a structured system with a

predefined business process in place, and its services fulfil a certain function (i.e. sales, marketing, inventory, purchasing, etc.). Typically, it is not customisable, but it is both configurable and scalable. This set of applications reflects the nature of other commercially available applications designed to retain a company's data on the cloud while it performs a specific or restricted business function.

5.2.1 Requirements

5.2.1.1 Organisational efforts

Organisational efforts are determined by the level of clarity in organisational policies, roles, responsibilities, and reporting channels (Sebastian-Coleman, 2013). Efforts to ensure the clarity of organisational elements for employees can ensure a smooth transition and transformation (Gutierrez et al., 2015). Similarly, the greater the obscurity of organisational elements, the more probable that politics and conflicts may influence the transformation process (Shah et al., 2017).

5.2.1.2 Business Process Re-engineering Efforts

Transformational efforts are indicated by the perception of employees with regard to the effort required to embrace new technology in the workplace. This effort is indexed by perceptions of business process re-engineering, the significance of BPR disruption to the current environment, the level of risk associated with the transformation, and the perceived time required to effect successful transformation (Dezdar, 2012; Mandal, 2019). The greater the perceived workload required to fit the system in, the more potential resistance and effort needed, with potential ramifications for success.

5.2.1.3 Service Provider Efforts

Service provider effort is perceived as critical for PBCS, similar to DCS. However, in addition to all the aspects identified in the DCS in terms of reliability, professionalism, quality, responsiveness and delivery on time, there are other factors to include here due to the nature of the PBCS (Mazumder & Garg, 2021). These are the closeness to the workplace and the availability of assistance within the implementation timeframe (Sunyaev, 2020). The reason for this addition is that the transformation process is challenging and requires immediate responses to any issues raised during the process.

Thus, the perception of the providers' proximity and availability during the implementation period is essential to mitigate concerns about the need for immediate actions in the case of disturbances caused by the system.

5.2.1.4 IT Efforts (Customisation, Configuration, and Integration)

PBCS are hard for SMEs to customise independently; but efforts can be expended to configure the assets and objects in the system and to define the nature of reports (Gupta et al., 2017). Due to the complexities of these efforts, they must be completed by an IT department, not by users.

Thus, an effort is required to configure and integrate different functions. The configuration is for fields in the interfaces, the level of change in the template reports provided by the system, and the number of them (Usman et al., 2019). Integration efforts are typically translated into efforts and integrated with internal and external systems and with other technologies in the workplace setting (Usman et al. 2019).

5.2.2 Capabilities

Soft efforts in transformation demand organisational capabilities, while technical efforts require technical capabilities (Ulrich et al., 2004). Thus, to succeed in PBCS, both IT capabilities and organisational capabilities are required.

5.2.2.1 IT Capabilities

PBCS is characterised by rigid systems; thus, to reduce the negative effects of rigidity, IT infrastructure capabilities are required. IT infrastructure capabilities are defined as IT routines and practices designed to empower the use of IT in an organisation by improving scalability and compatibility. According to Chung et al. (2003), IT infrastructure lends flexibility when adapting and adopting different software applications to different data structures. Offering the assistance of IT departments leads to relatively higher rates of success when delivering applications than not doing so (Chen et al., 2015).

5.2.2.2 Organisational Capabilities (Assimilation & Exploitation)

In terms of the soft efforts required to successfully embrace PBCS, the capabilities proposed as absorptive capacities are assimilation and exploitation. Assimilation

capability is defined as an organisation's ability to embed reflections from novel changes in the environment quickly into business as usual (Kim, 1997; Szulanski, 1996). The practices contributing to building this capacity include communication and knowledge sharing across departments (Kwahk et al., 2020). They can alleviate the challenges that arise when adopting PBCS from a poor organisational structure, vague responsibilities and accountabilities, and poor communication channels. In other words, assimilation capability is expected to reduce the negative effects of the soft efforts required to successfully implement PBCS.

Exploitation capability is defined as the organisation's ability to exploit innovations in the environment (Miroshnychenko et al., 2021). The main practices indicating such capabilities are management support to develop prototypes and to reconsider the use of technology to attain more benefits and opportunities. Exploitation is at a higher level than assimilation, because assimilation focuses on the capacity to deal with the efforts required to use applications, while exploitation focuses on realising the value and benefits from them (Miroshnychenko et al., 2021). Exploitation capability is proposed to reduce challenges due to complexities in the organisation and transformation efforts. Exploitation capability indicates top management support of the transformation process, which is known to improve the success rate (Kwahk et al., 2020). According to the literature, the more extensive top management involvement and support, the more successful the implementation will be (Kwahk et al., 2020). The reason for this is that top management can address the political issues and organisational obstacles to the transformation process (Miroshnychenko et al., 2021), and reduce resistance to business process re-engineering efforts (Israelit et al., 2018).

5.3 Improving the PBCS model (interview research)

The interviews were analysed using word analysis, and keywords to emerge were "applications", "functions", "access", and "provider". These keywords reflect the nature of cloud business function applications.

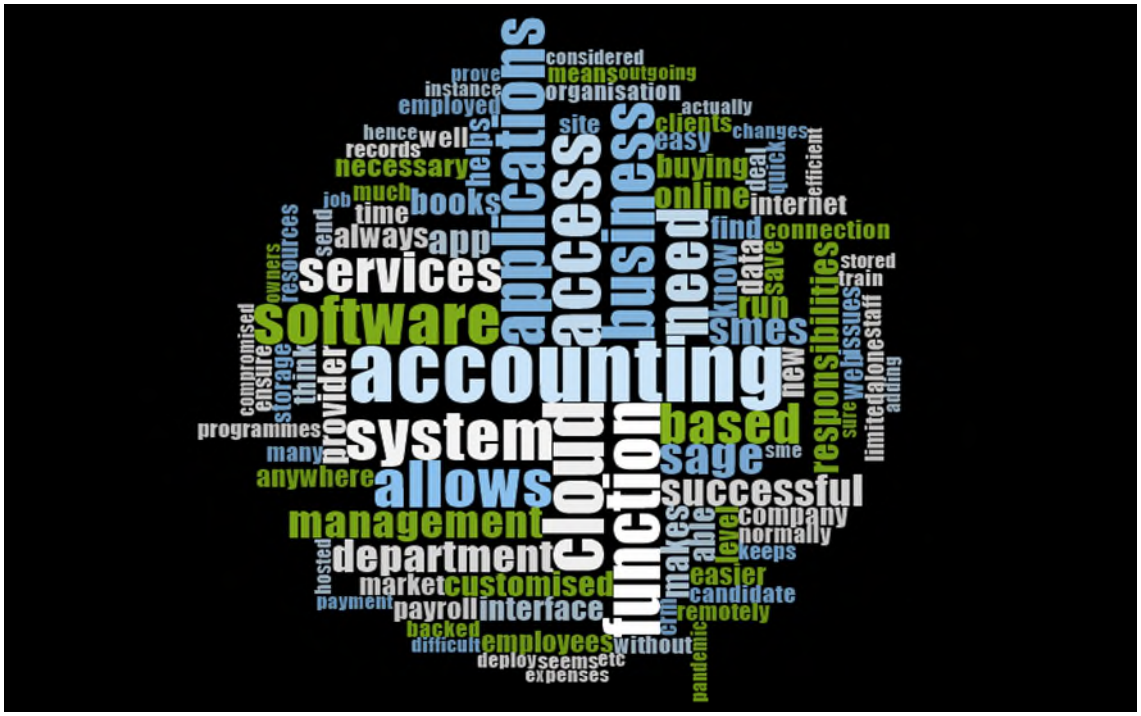

Figure 5-2: PBCS Visualised Text Analysis

The experts agreed that the classification of off-the-shelf business applications should be termed Business Cloud Package Services. The dominant examples are human resources applications, accounting/invoicing applications, warehouses applications and CRM applications, As shown in Figure 5-2 above.

> *"We are using ALMUHASB ALSHAML & SMACC (accounting app)" SME 25*
> *"All business activities are done and managed in FALCON app (HR app)" SME 24*
> *"Our invoice application is (QEOOD)" SME 27*
> *"We use a CRM system Online platforms" SME 30*
> *"CRM - Orchard. Database in the cloud" SME 29*

These applications are integrated with a specialised functional organisation. For instance, HR applications are integrated into HR organisations. For instance, the Bayet HR application is integrated with Bayet HR consulting firms. This integration involves a specialised functional consultant, which lends value to the application in terms of offering best practices and aggregated solutions to SMEs that do not have access to specialised consultants.

> *"Our firm is using the Bayet applications in finding the desired candidate most suitable for the job" SME 39*

Clear examples of financial applications include Xero and Odoo. These offer SMEs access to well-established automated accounting practices. SMEs are connected to consulting accounting firms through accounting applications, and financial statements are developed through the application and checked and audited by the financial institutions with minimal effort and cost.

> *"Odoo is used by our firm, it is well known here in Saudi and across Middle East, we run the business through it." SME 21*

These applications are highly independent and difficult to integrate with those applications already being used by the organisations.

> *"This accounting application is not successful because it does not integrate with our systems very well" SME 26*

This could push organisations to adopt applications developed in another language, necessitating a significant level of manual work from employees. Nevertheless, this process can be perceived as cost-effective because ECS applications are too expensive for many SMEs firms, and the level of sales/human resources/ accounts do not justify the costs payable for ECS.

> *"We have many systems and for sure we encounter lot of effort in tracking all, but it is better than paying 2 million, and unfortunately we can't just have the fund." SME 35*

The proposed model defined two main aspects of the efforts affecting the successful delivery of information success for PBCS. These are people-based and technical (IT) efforts. The capabilities required are absorptive capacity (Assimilation and Exploitation) and technical capabilities (IT infrastructure). However, before examining the resources required for the successful realisation of these benefits in-depth, the next section will investigate the nature and characteristics of this application.

5.3.1 Technical Resources

Technical resources are defined as the technological artefacts and relevant technical knowledge required to achieve business as usual. Thus, the technical resources here are classified under two main categories: the nature of technology as cloud computing and as a fragmented system.

5.3.1.1 Cloud-based resources

These applications are characterised as functional (i.e., designed to perform certain standard tasks using best in practice of the industry) and, because they are cloud-based, they also include some technical resources. They are accessible, and offer virtually unlimited storage, and security.

The first feature of note is the virtually unlimited storage at an affordable price and with reasonable maintenance costs.

> *"Yes, it keeps everything we need without taking too much space" SME 21*
> *"I use Oracle for HR purposes, any system which stores data online securely so it can be worked on from various locations" SME 38*
> *"Secure way of **storing large amounts of data**. Can access the software remotely and does not require you to be on a specific device". Expert 11*

This type of storage is accessible anywhere and anytime as long as an Internet connection is available. This feature helps distribute the system over many computers, laptops and mobile phones in many offices, branches, or even countries at the same time.

> *"Yes, it provides easy and secure access" SME 36*
> *"A platform that is accessible everywhere for everyone. Yes, you access important information within minutes, & it is updated just as quickly" Expert 6*
> *"Workday: HR related application management. Non-locally sourced workflows and applications. Yes, the **ability to access on the go from multiple devices** of varying types is beneficial" SME 35*
> *"It is successful in that we are **able to access the information** needed." SME 22*
> *"People can access information anywhere easily." Expert 12*

The final feature is that storage and accessibility are highly secured, which offers a safe way for organisations to share their data with collaborators.

> *"Finance based apps which are held remotely in the cloud so one online login is required to access all information". SME 24*

5.3.1.2 Fragmented Systems

These functional applications work in silos. Potentially there are issues linked to integration, such as when buying a certain application that provides an integrative API platform with other applications or an application that can offer some features from other applications that may solve some integration issues, but which are not perfect solutions. An example of this first case is Sage accounting and SAP HR, which have no integration between them.

> *"Quick Books, we use a CRM as well, but disconnected systems" SMEs 32*
> *"SAP for finance, Salesforce for CRM and Teams" SME 22*

APIs, or extensions, can be used to handle other functional applications, such as marketing or payroll functionality, without the need to buy a dedicated application for payroll or CRM.

> *"Xero - accounting software Sage - accounting and payroll. Be able to access from a cloud-based system and can therefore pick it up on any computer" SME 32*
> *"QuickBooks online, use it for all our accounting features, including payroll and pulling reports." SME 29*
> *"Oracle for managing procurement and HR functions. A system that is hosted externally and can be accessed remotely using any device" SME 33*
> *"SAP. Used for finance and HR processes" SME 39*

This kind of integration is useful but relatively limited in scope and capacity. All the organisations in this study considered PBCS to mainly be an accounting application. However, the extras are limited to only two additional functions, which are the HR application and the CRM application.

5.3.2 Requirements

The qualitative research proposes the four main efforts required to assimilate PBCS into the SME context in Saudi Arabia. These are organisational, BPR, service provider, and IT efforts.

5.3.2.1 Organisational Efforts

The respondents agreed on the importance of the clarity of organisational policies and rules, roles, responsibilities, and accountability due to their complexity. The aim is to clarify the direction and process of transition from As-Is (the current status) to To-Be (after the implementation of the system), which is the key determinant when managing the transformation process. This research also found, as summarised in Table 5-1, that the clarity of reporting across departments is a key factor in ensuring a successful transformation. The reason for this is that the communication structure across members in the organisation informs the power structure, as well as possible access to information and knowledge, which in turn could lead to resistance in the transformation process. Consequently, the clarity of the current reporting structure, and how the process will be replicated and mapped in the new system is integral to the process of success.

Table 5-1: Organisational Requirement Aspects

Aspects	Evidence
Organisational policies and rules (simple and understandable by everybody)	*"To my knowledge SMEs Owners should clarify of the roles, responsibilities to employees otherwise things get trampled over time." Expert 14* *"Guess it would be when their current system becomes unusable, or breaks would they look to change or upgrade. But there is always a conflict in agenda between stakeholders" Expert 5*
The clarity of the roles, responsibilities and accountabilities	*"Relate to SMEs. And to my knowledge SMEs Owners should clarify of the roles, responsibilities to employees." Expert 1* *"Yes, it is successful due to a **good implementation** and **robust clear processes".** SME 36*
The reporting among/across departments	*"Communication is always a problem because every head of the department wants to prove his point of view and mainly that's when issues arise" Expert 12*

5.3.2.2 Business Process Re-engineering (BPR) Efforts

Business process re-engineering efforts describe the time and risk involved in moving the organisation from its current As-Is without a PBCS subscription to the To-Be, with an operating model utilising PBCS to perform the business activities. The level of BPR spent is perceived by experts as a critical predictor of any successful transformation.

> *"Transformation needs a significant time and effort! it is also a problem even for organizations that have already adopted cloud services as you may find most business process department work in silos" Expert 10*

Thus, as found in the literature, and confirmed by experts, the importance of considering the level of effort and disruption to the current operations is necessary when explaining the variation in the success of PBCS adoption across SMEs. For the qualitative researcher, there is a new aspect here, which is perceived risks related to business process reengineering. Risks associated with the transformation of the organisation result in the directors and SMEs owners being reluctant to change and proceed with the implementation of the application. Indeed, some of them may even pause the implementation if the perceived risks are escalated and represent a significant disruption to business continuity (i.e. business continuity risk).

> *"Most SMEs are not ready to implement the change within their business departments. i.e. the level of disruptions of their current operations and you may find stressful workers because of the change. Some business owners hold the process due to such perceived risks" Expert 7*

5.3.2.3 Service Provider Efforts

In the case of PBCS, the qualitative data confirms the findings of the literature, that in the context of SMEs in Saudi Arabia, the service provider's efforts play a significant role in explaining the variation in success and adoption of PBCS. This is because, typically, the service provider offers not only a specific technology, but also the professional services to the SME as part of the package. Thus, the monthly subscription is not only for the storage of data but also for services provided in terms of consultations and extra services, such as payroll, connections with banks, connections with taxes and payment gateways. Thus, this relationship is much more significant here than in the case of DCS. Consequently, the criteria identified as describing a "good" service provider include reliability, quality, responsiveness, delivery on time, proximity to the workplace, the language of the service provider, and availability in the implementation timeframe.

Reliability and quality, as proposed by the literature, were found by experts to be among the most critical factors in terms of delivering PBCS successfully. The justification here is that the perception of reliability and quality indicate that the services offered are reliable, speedy, and error-free, which convinces the user to use the application and be motivated to engage with the service provider's services as specified in the package.

> *"SMEs, for instance, complain about the cloud vendors reliability, which are perceived as obstacles during cloud adoption and deployment time" Expert 14*
> *"When we set up the system there were many mistakes and that's why the first thing, we did is to find a bug or error in the system and then send it to service provider to fix these mistakes, its crucial to select the best provider." SME 31*
> *"Yeah) Oracle) does the job the current version we have is quite outdated. Not very user friendly. I am not happy with it; it Can sometimes be slow or require reloading" SME 37*
> *"Our data is quite sensitive, and that's why our client does trust us, and so when the application was selected, the privacy of our data was one of the main factors" SME 30*

Responsiveness and the language of the service provider (i.e. in Arabic) are other aspect of the critical requirements for a successful relationship between service provider and SME.

Language is key for SMEs, as most speak and understand Arabic as their mother tongue. Although new start-ups by entrepreneurs who have studied in Europe and USA may prefer English language service providers, the dominant population prefers Arabic language providers to avoid mistakes or unnecessary misunderstandings, especially when they will be engaging in financial and sensitive transactions.

> *"In my opinion, Small businesses here would prefer Arabic language interfaces for these types of apps to avoid misunderstandings and to find affordable candidates" Expert 10*
> *"Language complexity, many international providers provide English only interface, and many employees are not able to read" Expert 15*

Responsiveness is also key because the users may face challenges using the services offered or accessing the data on the cloud system. Thus, immediate response is critical for business continuity and reduces the perception of business disruption risks.

> *"The service provider should offer 24/7 technical support, the availability for us is a key for our services. This is the main point" Expert 11*
> *"Service provider is a concern sometimes when it comes to their* ***availability****,* ***responsiveness*** *and* ***closeness to the organization workplace*** *location and* ***languages*** *of cloud providers considered to be barrier" Expert 2*
> *"Miscommunication between cloud providers and SME owners is also considered to be a barrier for successful adoption." Expert 12*

Similar to responsiveness, a new construct proposed by experts concerns closeness to the provider's workplace. Some of them indicated the importance of this factor because it enhances confidence in the application and improves the adopting organisation's ability to manage possible business continuity risks. For example,

> *"The cloud provider we deal with is 2 blocks away and in many situations, we needed instant response we send my assistance to get it done. And it proves it be working. Hence we are always ahead of market." SME 34*

Others believe there is no need for this because online troubleshooting services are useful and practical:

> *"The online availability of our provider is great and for this reason, I don't find the closeness to workplace is a necessity" SME 31*

SMEs do not have access to technical competencies for understanding technical troubleshooting, and so this variable is retained, as it can be perceived as an overwhelming barrier to acceptance of a particular PBCS.

Delivery on time and availability within the implementation period were not found to be critical factors in this relationship because the deployment of the application itself is not a big challenge, as the application is completely on the cloud, and there is no need to install it on the computers. Additionally, the processor capacity is in the cloud and there is no requirement for physical computer memory. Thus, the requirement for delivery on time is removed, with the more important thing being the support following the first instance of using the application.

5.3.2.4 IT Efforts (Customisation, Configuration, and Integration)

It was anticipated that, from the literature, customisation, configuration, integration, and programming might be valid. However, due to the nature of SMEs, they cannot afford to hire professionals, and as service providers lock their applications and do not sell them as open-source code, customisation and programming options are eliminated.

> *"Applications are sold as they are; there is no possible ways to customise it. Even if they can be, I do not have the resources for that" SME 26*

Programming can be used to bridge the connection between applications when they are delivered in a different language. However, this option is complicated and too expensive for SMEs to afford. Except in a few cases, the majority indicated that the option of developing programmes internally is an unlikely one for Saudi SMEs.

> *'Normally most SMEs are buying a stand-alone application which is because SME's limited resources, but most of the applications are multi-tenancy but not customisable so that SMEs can save cost because you are buying a package for 100 people for instance, and normally they are scalable whenever they need adding new records' Expert 15*

The technical efforts needed are an impediment to the successful implementation of the PBCS, and these were predicted to include service provider efforts, customisation, configuration and programming. However, following the interviews with the experts, programming was no longer considered, because the SMEs in Saudi Arabia do not have access to sufficient professional programmers to successfully deliver new applications to integrate or connect different applications. Such a task is perceived to be prohibitively expensive for SMEs

> *"And that integrations between systems with clients and vendors is an obstacle" Expert 16*

Thus, the IT requirement for customisation of these applications has been removed as many of the respondents do not see the relevance to it. The main reason for this is that they are limited by resources from hiring specialised programmers or spending significant amounts of money on specialised companies to develop custom made solutions.

5.3.3 Capabilities

These applications are rigid and require additional resources to change the organisation to align with the process of attaining the benefits predicted from them.

> *"They are useful but not used to their full potential. The systems can do more than the organisation currently used them for." Expert 11*

In terms of the soft capabilities required to successfully embrace the PBCS, the proposed capabilities are human resources capabilities (learning and recruitment) and absorptive capacity (acquisition, assimilation, and exploitation).

5.3.3.1 Human resources capabilities

An emergent theme here is the importance of HR capabilities. Experts argued for the importance of learning capabilities for the Human Resources department but did not support the importance of recruitment capabilities. Experts indicated that PBCS applications are not widely available in the market, and so finding a candidate with the specific skills for a certain application is not a practical option.

> *"It's quite difficult to find candidate who are familiar with this level of applications due to the verity of them, the need to train the newly employed staff is a necessary" SME 28*
> *"However, both applications have too many steps to access certain information which needs time to be familiar with them" SME 23*
> *"It is fairly simple to use once you have learnt it but take a few months to get your head around." SME 35*

Thus, this research eliminated recruitment capability as one of the key capabilities required for successful delivery of PBCS applications. However, learning capabilities were found to be significant due to the unique requirements of the applications. Hands-on training on the application were arguably the most important factor when using the technology.

> *"It's quite difficult to find candidate who are familiar with this level of applications due to the verity of them, the need to train the newly employed staff is a necessary" SME 21*

5.3.3.2 Organisational Capabilities (Assimilation & Exploitation)

The proposed absorptive capabilities required to successfully embrace PBCS, are acquisition, assimilation, and exploitation absorptive capacities. Acquisition capabilities were not found to be critical in this relationship, because employees are not expected to know much about the different options available in the market. Presumably, heads of departments may be able to address the different applications and options, but normal employees may find it difficult to address the department's needs. Thus, acquisition capability was not essential at this level. However, the abilities to assimilate and exploit were important. Assimilation here indicates that employees are adopting new practices to integrate new applications into Business-As-Usual (BAU).

> *"It is necessary that candidate should be able to pick these services and master them in order to make use of the system fully." Expert 12*

Thus, being able to accept and assimilate the applications in BAU, indicates the possibility of a positive effect to alleviate organisational efforts and deliver successful transformation when adopting PBCS.

Exploitation capabilities are believed to have a higher effect on the success of PBCS, more so than assimilation ones. Exploitation is the ability not only to accept and integrate the application in practice, but also to ensure that organisations are able to capture and hunt new opportunities whenever possible. As experts have indicated, some organisations motivate and encourage employees to try new methods, new modes, and new mechanisms for delivering their activities day-to-day. Those "open-minded" organisations may be able to ensure the best use of the applications and so perceive that they have more success than others.

> *"Our management board has a responsibility to motivate the staff to ensure the employee is adhering to the systems and are able to use it in a daily basis in the workplace" SME 39*

Therefore, it was proposed that the assimilation and exploitation of organisational capabilities, not acquisition, influences the successful transformation of the organisation for the use of PBCS applications. Not only that, but also, it is believed to positively influence the relationship between soft efforts and success.

5.3.3.3 IT Capabilities

There are three IT capabilities proposed for the successful delivery of PBCS. They are IT business alignment, management and infrastructure capability, as indicated in the literature review. IT business alignment and management have been removed, despite its importance, because, as experts highlighted, the relationship is more between users and service provider directly, with no requirement for technical IT managers to intervene. This is because the service is highly specialised for the functional department and the language is highly business related, the IT department has limited space to offer. For instance, accountants need specific accounting help to deliver the services offered over the application. They will also speak directly to the service provider as the services are offered over the web. The assistance or customisation that can be offered will be done from the service provider's office, not from the clients. Thus, there is no real requirement to engage IT managers in the conversation with service providers.

> *"SMEs are not measuring ROI for any new IT investments. And in fact some do not evaluate their IT systems." Expert 7*
> *"Since we deployed the Falcon App, Our HR department is in constant communications with the service provider to ensure our exact needs are met." SME 23*

Additionally, they proposed reducing the technical efforts required for successful delivery of these systems. The management application was found to be crucial for ensuring any technical issues relating to Internet access or computers health checks that are good enough for basic operations on computers. Otherwise, users will refrain from using the organisation's computers and laptops.

> *"In the IT department, we ensure access to the Internet is always granted, and they check if other departments are having any issues." SME 33*

Infrastructure is a debated point, because SMEs may not have access to the required resources for higher IT infrastructure managers able to manage the scalability and integration of applications. However, this aspect is retained in this research, because despite the scarcity of this capability, the researcher argues that this resource is vital for successful continuity of the business model and the success of the applications.

> *"Our cloud App is compatible with other apps/services in the market which can be critical for adding services when needed." SME 24*

> *"I use SAP as the accounting system for our company. We also use several cloud-based systems for production and sales reporting areas of the business. Yes, the systems are successful as the majority of time the IT infrastructure is set up well, so we have no issues accessing the systems wherever we are in the world once we are connected to the companies VPN service." SME 38*

Modern start-ups rely on IT companies able to outsource IT infrastructure management services at affordable prices to SMEs. The role of infrastructure is crucial because it indicates the level of scalability of the packaged applications and ensures that scalability is doable and successful. The scalability of the packages can be a restraining point for SMEs growth and is significant for business sustainability:

> *"Cloud Applications are difficult to deploy for companies who lack an IT infrastructure." Expert 3*

5.3.4 Business Value

Business value has been captured in three main forms: TAM, Use and Investment success.

5.3.4.1 TAM (Satisfaction)

The first aspect is related to the Technology Acceptance Model and covers ease of use and usefulness. The system is successful in terms of ease of use, and also in that, it makes the business process easier:

> *"An online service to make running a business easier. My company uses quick books and from what I've seen it makes doing day to day business a lot easier." SME 37*
> *"I think the accountants use Sage for accounting, to make it easier. Accounting or other professional function programmes which are stored online and not on individual machines". SME 29*

Also, it has been perceived as useful in terms of reducing mistakes and errors present in the business process.

> *"I think it must be! We never have accounting problems." SME 40*

5.3.4.2 Use

The second aspect of success relates to use in terms of use by the functional group dedicated to it, and its beneficiaries (i.e. accountant and departments dealing with accounting information; HR department and employees log in to their payroll accounts). The system empowered the organisation to use the application, not only in normal life but also in the Covid-19 work environment, as it allows people to access the system remotely

anytime and anywhere lending flexibility to the process and helping to make more use of it.

> *"It gives more flexibility to working, especially during the Covid-19 government restrictions when staff were working from home". SME 30*
> *"Also it has allowed the business to function successfully throughout the pandemic by allowing working from home where needed." SME 39*
> *"Yes, as it has enabled flexible working during the pandemic." SME 28*

It has transformed the way of managing businesses and has empowered employees to work from home as if they were working in the office.

> *"A system that can be accessed anywhere.It works for homework as well as office work, and this has proven successful throughout Covid." Expert 16*
> *" It means employees can work anywhere and access/back up the software." SME 22*
> *"Very successful especially **with remote working over** the last 18 months. It has really transformed how our teams use these cloud systems." SME 36*
> *"Yes, we all share access and have access to the software, which makes project work effective. Due to the pandemic, we were all **working from home** and these **cloud-based systems** meant we could access everything we needed from home." SME 38*

5.3.4.3 Functional Benefits

The third aspect of the definition of success relates to benefits from the deployment of this technology in the workplace. These are functional benefits, i.e., benefits related to the support it gives to the functional department, of the applications are highly dependent on the department to serve, i.e., the accounting application will perform functions that differ from CRM functions. Human resources specialised applications are for storing and retrieving data related to human capital (i.e., employees' information, payroll, and timesheets).

> *"Oracle - HR systems that store all employee information." SME 36*
> *"We use SAP for time sheets. We use it to support paying our employees." SME 27*
> *"Workplace for HR, Payroll, Time Recording, Holiday booking etc. Reliable central and simple to use repository for all company staff to use." SME 32*
> *"A central database opens to the majority of the employees in the organisation. Data is not physically stored on site." Expert 17*

These applications are mainly for reasons of convenience in terms of ease of storing data, saving time, accuracy, and the speed of the process. Although HR applications can provide data analytics for understanding the human capital in organisations; it seems that for SMEs, the use is limited to convenience rather than analytic purposes.

> *"It's successful because **it makes our life easier."** SME 37*
> *"Moderately. **Much faster** than paper systems it replaced." SME 29*
> *"Yes, there is no need to use memory devices to transport files. It is **easy to access."** Expert 2*

*"Oracle, it is used for HR process, **access** wage slips, update personal information etc." SME 28*
*"The success is defined by how quickly **I can retrieve the data**, how **accurate** it is, how **easy it is to find it**." SME 30*

The second functional application is Customer Relationship Management (CRM), which is the most important for sales-oriented businesses. It empowers business sales departments to understand their consumers better and manage their records more effectively and efficiently than manual or DCS functions. The chief benefits noted are as follows. First, multiple users can access customer records to improve the organisational decision-making process:

*"I use a web-based application call Click and Go. It uses Microsoft's Cloud platform. It allows me to input customer records and access them on site and remotely. It also allows **multiple users to access** customer records. I can also create custom reports for specialised output." SME 27*

Second, tracking benefits for marketing functions in terms of marketing leads, opportunities, and analysing the current status and better forecasting functions.

"Dynamics which is a CRM toll for recording leads, marketing opportunities and sales and future opportunities through this." SME 34

Third, recording and analysis benefits in terms of recording and using valid, reliable and timeline information on the market to conduct robust trend analysis to forecast market dynamics in a more effective and efficient way.

***"Measures** and **accurately** records process **trends analysis** and **forecasts** on a daily basis without fail." SME 40*

Accounting applications are specialised in finance and financial information, but it is considered as a bespoke system designed for integration with other systems, if the platform allows. This accounting system is characterized by being central, tracking, controlling and planning systems that are convenient to use. It is a central system because it centralises all the financial information within the organisation, and includes information on sales, purchases and production. So, all the information has two sides; an operational side to fulfil the functional work (i.e. sales, purchases, or production) and a financial side to record the financial considerations (i.e. receivable, payable, cash in and out, or inventory value).

> *"I believe it is called SAP, which is used for ordering and expenses. It is a system that **stores** and **processes** all our purchase orders and expense claims." SME 39*
> *"SAP - it's an accounting software that we use for all of the information. It **tracks** stock, hours and services, and allows us to bill others and be billed." SME 22*

Hence, it is a central application storing all the organisation's financial transactions. The application is used for control purposes to acquire one view of the financial position of the company.

> *We successfully use Sage to **manage** all incoming and outgoing financial transactions. It allows us to follow up clients for unpaid invoices so we can manage cashflow successfully SME 29*
> *We use it for purchase orders **management**, Accounts software for **reconciling** of outgoing payments and incoming remittances. SME 24*

The functionality of centralising and controlling the flow of information in the organisation helps it manage relationships with external stakeholders, such as customers and vendors, by sending and tracking invoices and payments.

> *"Sage, allows us to **send** and **track** payment of invoices, and reconcile them with our banking software, aiding debt management." SME 27*
> *"It is successful for us, and I define this success as that it allows us to **track invoices** and receive payments." SME 23*
> *"Sage Business accounting. Helps send and track invoices, and syncs with our business software." SME 31*

The quality of the data stored could help the organisation plan better and expect a better future, i.e. it can improve the planning functions of the organisation.

> *"A software programme that assists with the organisation. Yes, it is easier to budget and manage expenditure." SME 25*
> *"Sage for **budgeting** at our work." SME 34*
> *"They are used by my department to analyse accounting numbers on a daily basis." SME 40*
> *"Provides real-time **financial information** and control, **budgets** and **forecast**, time booking processes." SME 32*

Finally, all these benefits are leveraged due to the ease of the process, which makes the whole accounting process smoother.

> *"It makes the process of **dealing** with employee's expenses, and various credit cards a much **smoother** operation." SME 38*
> *"It has made accounts analysis much quicker and streamlined the process of collating data. For example, we can access information on updated revenues daily, whereas before we would only get this data twice a month." SME 37*
> *"Sage Intacct saves time for accounting, improving **ease of use - saves** manpower definitely successful; a great accounting system." SME 26*

5.3.4.4 Investment

The fourth aspect of the definition of success is investment success in terms of satisfying the ROI criteria. This success can be secured only if the use of the application improves the productivity of the work and reduces costs. Such success can happen when the system is believed to make work easier, improve the accessibility and flexibility of the work routines and the organisation's analytic capabilities.

> *"It improved my company performance as it presents remotely accessible programmes, ease of use, function, reporting capabilities" SME 40*
> *"Yes, it makes tasks much more efficient." SME 23*
> *"It works very efficiently and successfully. Orders and expenses are processed in a timely and efficient way". SME 25*

5.4 Examining the PBCS model (survey research)

This phase aims to examine the findings of the qualitative research. This section is structured as follows. It starts with the questionnaire design and constructs validity and reliability. The following section discusses the descriptive analysis, and the final section relates to the structural equation modelling fitness and results.

5.4.1 Questionnaire design

The research constructs for PBCS are eight: success (TAM, USE and INVEST), service provider, organisational requirements, individual requirements, HR learning, assimilation capacity, exploitation capacity, and IT infrastructure. Success is divided into three sub-success factors for this type of application, it is measured according to seven items: ease of use, usefulness, most employees use it, I use it most of the time, most employees are satisfied with it, it gets the expected ROI, and my organisation sees it as an asset. The nature of cloud business services means that they are not used by everyone in the organisation, and each business department has specific experiences with it that reflect their needs. Thus, three additions were made from the interviews to reveal this aspect of cloud packaged business services. The scale found was reliable, and the Cronbach Alpha for the three sub-success factors, TAM, USE and investment ROI are (.77), (.80) and (.71), respectively. Composite Reliability (.89), (.89) and (.87). and Rho_A (.80), (.80) and (.74) exceed the cut-off point of 0.6. This was found to be valid since the factor loading for the items in each construct is greater than 0.6, and the Average Variance Extraction (AVE) is (.80), (.72) and (.77), which exceeds the cut-off point of 0.5.

The determiners of service providers' efforts were identified previously in the literature (P67), but one additional item was added after the qualitative analysis: Language(s) of the Service Provider. This scale was found to be reliable because the Cronbach's Alpha (.85), CR (.88) and Rho_A (1.06) are more than 0.6 the cut-off point. It is also valid as the AVE (.602) is greater than 0.5, and all factor loadings for the items constituting this construct are more than 0.6.

The third construct is Human Resources' learning, which is measured by three items as previously indicated in DCS. This scale is found to be reliable because the Cronbach's Alpha (.85), CR (0.90) and Rho_A (.84) are more than 0.6 (the cut-off point). It is also valid as the AVE (.76) is more than 0.5, and all the factor loadings of the items constituting this construct are greater than 0.6.

Assimilation capacity, the fourth construct, was determined by three items identified in the literature as relevant. These are: In our company, ideas and concepts are communicated interdepartmentally, in our company, there is a quick flow of information (e.g. if a business unit obtains important information, it communicates this information promptly to all other business units or departments), our management demands periodical cross-departmental meetings to introduce new developments, problems, and achievements. This scale is found to be reliable because Cronbach's Alpha (.784), CR (.873) and Rho_A (.795) exceed the 0.6 the cut-off point. It is also valid as the AVE (.697) is more than 0.5, and all the factor loadings of the items constituting this construct are more than 0.6.

The fifth construct exploitation is measured by two items: our management supports the development of prototypes, and our company regularly reconsiders technologies and adapts them according to new knowledge. This scale is found to be reliable because Cronbach's Alpha (.817), CR (.916) and Rho_A (.817) are more than the 0.6 the cut-off point. The construct is valid because the AVE is more than the threshold of 0.5, which is .845.

The sixth construct, as shown in Table 5-2, is BPR effort and is measured by three items identified in the literature: Business Process Re-engineering efforts, the significance of the BPR disruptions of the current operations, and time required to complete BPR

successfully. This scale is found to be reliable because Cronbach's Alpha (.668), CR (.808) and Rho_A (.800) are more than 0.6 the cut-off point. It is also valid as the AVE (.587). The seventh construct is organisational resources, it is measured by: Organisational policies and rules (simple and understandable by everybody), The clarity of the roles, responsibilities and accountabilities, and the reporting among/across departments. This scale is found to be reliable because Cronbach's Alpha (.858), CR (.910) and Rho_A (.930) are more than 0.6 the cut-off point. It is also valid as the AVE (.773). Lastly, the IT infrastructure is measured by two items from the literature: Our information systems are scalable and compatible. This scale is found to be reliable because Cronbach's Alpha (.68), CR (.860) and Rho_A (.730) are more than 0.6 the cut-off point. It is also valid as the AVE (.773).

Table 5-2: Confirmatory Factor Analysis (CFA) For PBCS

Construct	Items	Loadings	α	Rho_A	CR	AVE
TAM	Easy to use	0.923	0.76	0.79	0.89	0.80
	Useful	0.874				
USE	Most of employees are using it	0.879	0.80	0.80	0.88	0.72
	I use it most of the time	0.836				
	Most of employees are satisfied with it	0.838				
INVEST	It gets the expected ROI	0.854	0.71	0.73	0.87	0.77
	My organisation sees it as an asset	0.907				
Service Provider	Reliability	0.840	0.85	1.06	0.88	0.60
	Quality	0.898				
	Responsiveness	0.720				
	Closeness to work	0.532				
	Language of service provider	0.840				
HR Learning	Ability to deliver the appropriate training courses.	0.866	0.84	0.84	0.90	0.76
	Effectiveness of responding to training needs.	0.901				
	Knowledge of effective training.	0.860				
Assimilation Capacity	In our company, ideas and concepts are communicated cross-departmental.	0.861	0.78	0.79	0.87	0.69
	In our company, there is a quick information flow (e.g., if a business unit obtains important information, it communicates this information promptly to all other business units or departments.	0.847				
	Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements.	0.796				
Exploitation Capacity	Our management supports the development of prototypes.	0.919	0.81	0.81	0.91	0.84
	Our company regularly reconsiders technologies and adapts them accordant to new knowledge.	0.920				
IT Infrastructure	Our information systems are scalable.	0.824	0.68	0.73	0.86	0.75
	Our information systems are compatible	0.912				
Organisation Requirements	Organisational policies and rules (simple and understandable by everybody)	0.909	0.85	0.93	0.91	0.77
	The clarity of the roles, responsibilities and accountabilities	0.936				
	The reporting among/across departments	0.785				
BPR	Business Process Re-engineering efforts	0.919	0.66	0.80	0.80	0.58
	The significance of the BPR disruptions of the current operations	0.920				
	Time required to complete BPR successfully	0.673				

5.4.2 PBCS Descriptive analysis

Success is measured by three different constructs: TAM, use and investor success. The highest score is for TAM (5.36), while the lowest is for investment success (4.91). This result indicates that more companies have positive attitudes towards PBCS, but fewer SMEs are able to realise the significance of investment success. Investment success could be more challenging to achieve than perceived ease of use and usefulness (TAM).

The highest correlations with TAM (*r= .459, P<0.01*) and with Use (*r= .391, P<0.01*) are HR learning for TAM. The highest correlation with investor success is exploitation capability (*r=.337, P<0.01*), followed by BPR (*r=.321, P<0.01*). The lowest important, but the significant result is for the service provider with TAM (*r=.192, P<0.05*), Use (*r=.204, P>0.05*) and not is significant relative to investor success. The service provider is important for perceived ease of use and the usefulness of the users (TAM), which is important to use (Use). This does not necessarily improve investment success as other factors are possibly more important for achieving success, as demonstrated in Table 5-3.

Table 5-3: Correlations Analysis for PBCS

				Pearson Correlation									
	$\bar{x}$	σ	$\bar{x} - 4$	1	2	3	4	5	6	7	8	9	10
(1) TAM	5.36	1.36	1.36										
(2) USE	5.11	1.28	1.11										
(3) INVST.ROI	4.91	1.34	0.91										
(4) ORG	4.06	1.60	0.06	.044	.167	.195*	1						
(5) BPR	4.26	.98	0.26	.327**	.338**	.321**	-.043	1					
(6) SERV.P	4.21	1.17	0.21	.192*	.204*	.139	-.046	.341**	1				
(7) HR.L	4.48	1.38	0.48	.459**	.391**	.310**	.020	.380**	.186*	1			
(8) ASSIMI	4.63	1.26	0.63	.342**	.200*	.306**	.032	.163	.106	.330**	1		
(9) EXPLOT	4.89	1.31	0.89	.318**	.184*	.337**	-.057	.141	-.026	.277**	.343**	1	
(10) INFRAST	5.18	1.20	1.18	.192*	.257**	.272**	.036	.116	.240**	.393**	.159	.265**	1

****. Correlation is significant at the 0.01 level (2-tailed).**

***. Correlation is significant at the 0.05 level (2-tailed).**

5.4.3 Structural Model Assessment

Model fitness is accepted as SRMR 0.076, which is less than 0.1, indicating the model is fit and the Chi-square of 893.080 indicates an acceptable level of model fitness. The R^2 for success factors are 31%, 22% and 30% (as seen in Figure 5-3). The direct analysis is conducted PLS to avoid the multi-collinearity issue arising among the research constructs. To ensure TAM success, the antecedents in order are Human Resources Learning

capabilities ($\beta = .329, P < 0.01$), assimilation capabilities ($\beta = .168, P < 0.05$), and exploitation capabilities ($\beta = .166, P < 0.05$). Service provider efforts does not have adequate evidence to support the positive effect on TAM (P>0.05). The antecedents of use are Human resources learning ($\beta = .355, P < 0.01$), service providers' efforts ($\beta = .19, P < 0.05$) and organisational efforts ($\beta = .174, P < 0.01$). All of which are significant. Investment success antecedents are business process re-engineering ($\beta = .258, P < 0.01$), organisational efforts ($\beta = .198, P < 0.01$), exploitation capabilities ($\beta = .182, P < 0.05$), assimilation capabilities ($\beta = .176, P < 0.05$), and IT infrastructure capabilities ($\beta = .170, P < 0.05$), as shown in Table 5-4.

Table 5-4: PBCS Path Coefficients

	(O)	(M)	(STDEV)	(|O/STDEV|)	P Values
TAM (R^2=31%)					
Human Resources: Learning	0.329	0.331	0.093	3.525	0.000
Service Provider Efforts	0.172	0.181	0.091	1.886	0.060
Assimilation Capabilities	0.168	0.169	0.079	2.123	0.034
Exploitation Capabilities	0.166	0.161	0.078	2.139	0.033
Use (R^2=22%)					
Human Resource: Learning	0.355	0.356	0.088	4.018	0.000
Service Provider Efforts	0.190	0.209	0.093	2.041	0.042
Organisational Efforts	0.174	0.177	0.071	2.451	0.015
Investment (R^2=30%)					
Business Process Reengineering Efforts	0.258	0.262	0.079	3.278	0.001
Organisational Efforts	0.198	0.204	0.063	3.136	0.002
Exploitation Capabilities	0.182	0.182	0.073	2.477	0.014
Assimilation Capabilities	0.176	0.178	0.074	2.379	0.018
IT Infrastructure Capabilities	0.170	0.169	0.074	2.296	0.022

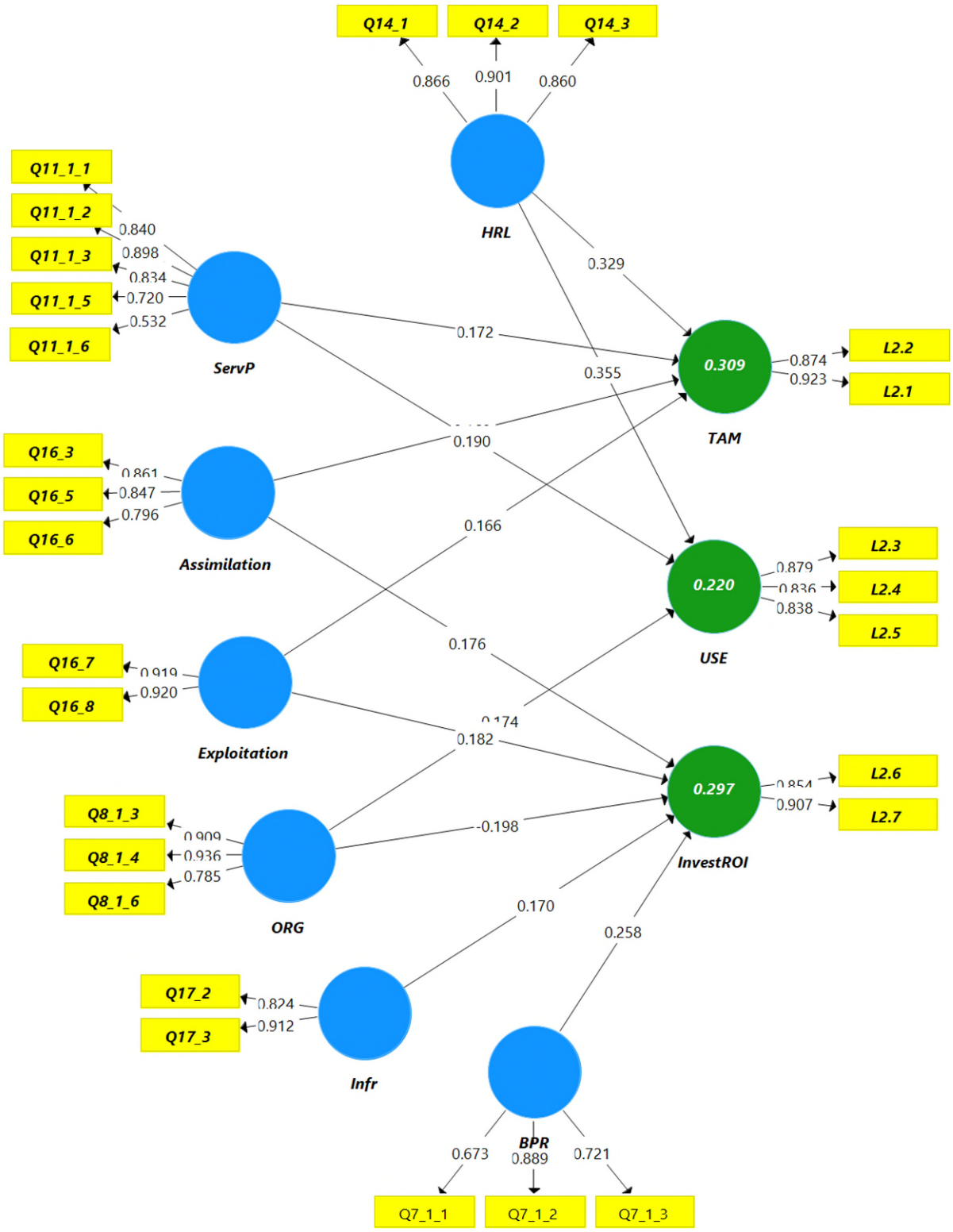

Figure 5-3: PLS Results of PBCS (n= 130)

5.5 Packaged Business Cloud Services (PBCS) Model

The main generic PBCS model developed in the literature consists of four main constructs: technical resources, capabilities, requirements, and success, as seen in Table 5-5. The extrapolation from similar literature has helped to operationalise each of these constructs in a more detailed way. The technical resources are defined as being a structured system with predefined business processes (i.e. certain functions) and a host of the company structured data on third-party cloud storage. The organisation benefits from using third party best practices developed by the provider. The qualitative research comes to agree with the definition deduced from the literature but added a few aspects, which are the virtual unlimited storage, secure data storage compared to the on-premises application but also being fragmented and in silo applications.

Capabilities are defined as organisational and functional capabilities. The proposed organisational capabilities are assimilation and exploitation. The qualitative analysis comes to validate them, and quantitative research proved the positive association between them and success of the packaged cloud services. The functional capabilities proposed are IT ones, but the HR capabilities are developed from the interviews. The IT functional proposed capabilities are IT business alignment, and IT infrastructure. The qualitative research approved the IT infrastructure and opposed the other capability. The quantitative research found significant evidence to prove the relationship between the infrastructure capability and the success of the packaged business cloud services. Regarding the HR capabilities, the qualitative and quantitative research has proposed and proved the learning capabilities.

From synthesizing the literature, there are four requirements for successful assimilation of the package cloud services. The first proposed requirement is the organisational one. The proposed organisational requirement is the clarity of the organisational policies, roles, responsibilities, and reporting channel. The qualitative research endorsed these aspects and added accountabilities and not only reporting inside the department but also reporting structure across departments. The second proposed requirement from the literature is the business process re-engineering efforts to adapt organisation process with the pre-defined business process defined in the functional application. The qualitative

research endorsed this aspect and added the element of the risks associated with the business process management as a significant element to be considered. The quantitative research found this element improved the reliability of the construct and proved its necessity, and the whole construct of BPR was found to be essential for successful assimilation of the packaged application. The third proposed requirement is the service provider. The aspects defined of the service provider are reliability, professionalism, quality, responsiveness and on time, closeness to the workplace and availability in the implementation time, delivery on time. The qualitative research added language and removed availability in the implementation time and delivery on time. The reliability test, on quantitative data, ensured the internal consistency of the new construct. Besides, the service provider has been found a significant positive effect on the assimilation of the packaged business services. The last requirement proposed from the literature is the IT Requirements including Customisation, Configuration and Integration. However, the qualitative research disagreed on the importance of this construct. Thus, it has been removed.

The last aspect of the model is success. The literature is highly dependent on the TAM in terms of ease of use and usefulness. The qualitative research has extended the definition to include the benefits of these services. Due to the unique characteristics of these services in terms of being function-based, they are different based on the functional type. HR systems focus on efficiency benefits. Customer Relationship Management cloud services offer planning, monitoring and tracking benefits. Accounting cloud services offer centralisation, tracking, planning and control benefits). The quantitative research has articulated success into three distinctive constructs: TAM, Use, and investment. TAM scale was built after Davis (1989) in terms of perceived ease of use and perceived usefulness. The other aspect is the use in terms of personal use, most of the staff in the department are using it, and they are using it most of the time. The third aspect is the investment success in terms of the return on investment. The third aspect is conceptualising the benefits because benefits are different based on the functional services and cannot be measured easily. Thus, the return on investment is reflecting the organisational view toward the realisation of the benefits.

Table 5-5: Evolvement of the PBCS Model

	Literature Review	Qualitative	Quantitative
Technical Resources	Computing solutions specific to certain functions	They are being accessible, virtually unlimited storage, and security, fragmented system	
	Structured system with predefined business process in place		
	Company's data on the cloud		
Capabilities	IT Business alignment, Infrastructure and Management capability	IT infrastructure only	
	Organisational Absorptive Capacity (Acquisition, Assimilation and Exploitation)	Only (Assimilation and Exploitation)	
		HR Capability (Learning)	
Transformation Requirements	Organisational Requirements (the level of clarity in the organisational policies, roles, responsibilities, and reporting channels)	Organisational policies and rules (simple and understandable by everybody) The clarity of the roles, responsibilities, accountabilities and the reporting among/across departments	
	Transformation Efforts (Business Process Re-engineering)	Like literature the new aspect here is the perceived risks related to the business process reengineering	
	Service Provider (reliability, professionalism, quality, responsiveness and on time, closeness to the workplace and availability in the implementation time, delivery on time)	Added language and removed availability in the implementation time and delivery on time	
	IT Requirements (Customisation, Configuration and Integration)	XX*	
Success	Usage, ease of use and usefulness	Usage, ease of use and usefulness	TAM
			Use
		Benefits depend on the functional application (HR system: Efficiency; CRM: Planning, monitoring and tracking benefits; Accounting: Centralisation, tracking, planning and control benefits)	Investment

* XX indicates construct's rejection

The final model is composed of five constructs, as demonstrated in Figure 5-4: technical resources, capabilities, requirements, benefits and outcomes. The technical resources are defined under accessibility, virtually unlimited storage, and security. In addition, part of the definition it is fragmented and not easily connected to other functional services. To achieve the expected benefits, there are capabilities and requirements that are found to be effective. These capabilities are organisational and functional capabilities. The organisational capabilities are presented as assimilation and exploitation capabilities. The functional capabilities are HR and IT capabilities. The HR capabilities include learning, while the IT capabilities are represented by the IT infrastructure capabilities. The requirements are service provider and business process reengineering. Moreover, another

significant requirement is the clarity of organisational policies, rules, responsibilities, accountabilities, and reporting channels within and between departments.

Success is taxonomized into four constructs: benefits, TAM, use, and investment success. Benefits are of two types: proceeding from being cloud and based on the type of function. Cloud based services include the scalability, and security of the data and virtually unlimited data storage capacity, which is accessible from anywhere in the world. Function based benefits include efficiency for the HR system and accounting, effectiveness in terms of planning, monitoring and tracking benefits for CRM and accounting. The benefits contribute to TAM, use and investment success.

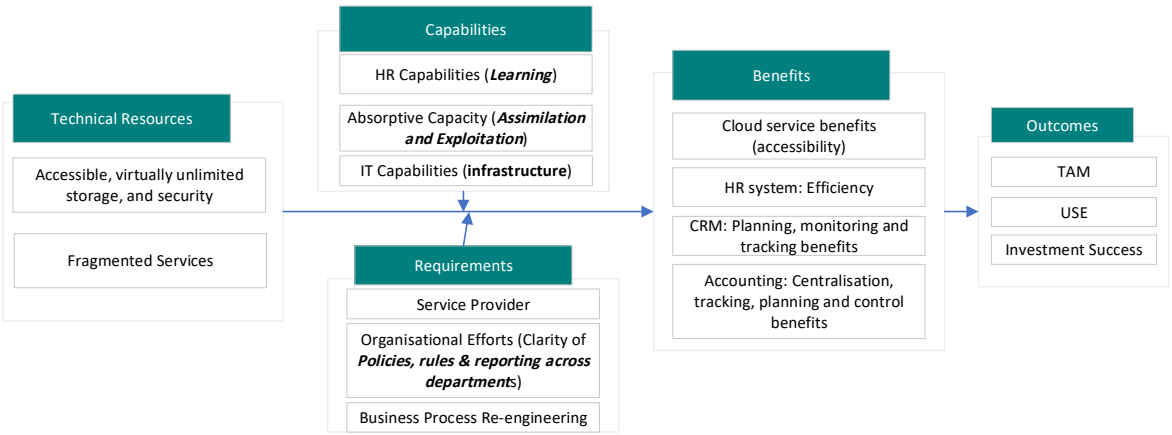

Figure 5-4: PBCS final model

5.6 Summary

The aim of this chapter was to develop a model for defining the technical resources, capabilities and requirements for successfully assimilation of the packaged business cloud services. The pragmatic staged based research was conducted through a phase of synthesizing literature, expert interviews, and survey research to develop, validate and examine to achieve this research aim. The final model defined two main aspects of the technical resources, three capabilities, three requirements and different aspects of benefits based on the nature of the functional service. The final concept is the outcome which is translated into TAM, use and investment success.

Chapter 6 : Enterprise Cloud Services (ECS) Model

6.1 Introduction

This chapter aims to develop, improve, and examine the Enterprise Cloud Services (ECS) model to explain and predict the level of success of these cloud services. ECS is highly-structured with full integration across the whole organisation. This chapter is structured into five main sections: developing the model from the literature (Section 6.2), improving the model based on the interview findings with 15 SMEs and 17 experts (Section 6.3), examining the model using quantitative data from a survey of 127 SMEs (Section 6.4), and finalising all the findings in a single model (Section 6.5). As illustrated below in Figure 6-1.

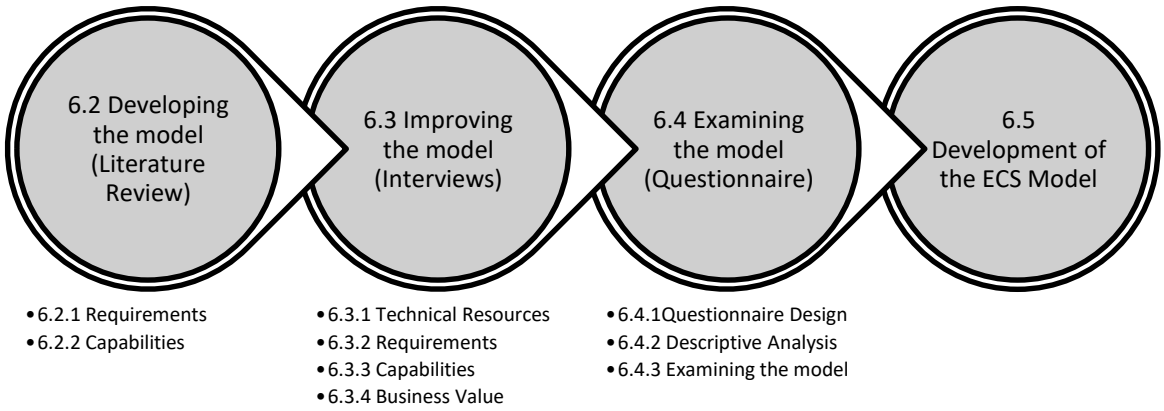

Figure 6-1: ECS Structure

6.2 Develop the ECS model (state of the art)

Enterprise Cloud Services (ECS) are cloud-based applications that are relatively customizable and expandable, compared with PBCS, to fulfil many business tasks. This group of cloud services is characterised by being customisable, scalable, interactive, and enterprise-integration applications (Gupta et al., 2017). These services cover and synchronise most of the organisations' functions and departments (Gupta et al., 2013). To embrace the power of these services, organisations require a restructuring of their business processes as a whole to align with the nature of their services. Also, they are

customisable, which means, based on IT capabilities, the system can be customised to fit the organisation's needs and objectives (Wang et al., 2019).

Thus, there are two sides to the equation, there are the people and technical efforts designed to tailor the system to the organisation's needs and the organisational and technical capabilities to deal with these efforts (Ali et al., 2021). Additionally, due to the SMEs context, the challenges with resources address another characteristic, which is that the adoption process requires additional capabilities from organisations to deal with them.

6.2.1 Capabilities

Since the scope of change is broader than for functional applications (i.e., PBCS), the required capabilities are intended to ensure that the people element can absorb this level of change. Thus, the required capabilities are HR functional, IT Business alignment capabilities and absorptive organisation capabilities.

6.2.1.1 Organisational Capabilities (Transformation Capabilities)

Absorptive capabilities are required for the successful adoption of enterprise systems. However, here the required level of absorptive capacity is the highest (i.e. transformation capabilities). In terms of transformation capabilities, the organisation is able to absorb new knowledge in an efficient manner, and use it for innovation and performing new tasks (Bharadwaj, 2000; Miroshnychenko et al., 2021).

Thus, transformation capabilities are indexed using three measures. Employees are able to absorb new knowledge and use it for further purposes, employees are able to link existing knowledge with new insights, and are able to apply this knowledge to our practical work (Miroshnychenko et al., 2021). This capacity is proposed as a significant indicator, not only for the successful implementation of the ECS, but also for alleviating the negative effects of the organisational and transformational efforts required for successful transformation. The justification here is that the organisational efforts indicate the level of change in the organisation's mindset from the current status to absorbing the enterprise systems into business as usual, as reflected in the transformation efforts (i.e., the business process reengineering efforts). Thus, if employees are able to grasp new knowledge fast and connect it to their current knowledge to generate new knowledge (i.e.

transformative capabilities), the possibility of accepting the enterprise system and possible change will be smoother and faster than for those who score low in transformative capabilities. Thus, transformation capabilities are proposed to affect the success rate of ECS adoption.

Proposition 1: Transformation organisational capability affects the success rate of the ECS positively.

6.2.1.2 Functional Capabilities: HR Capabilities

HR functional capabilities are the organisational competencies designed to identify weaknesses in the knowledge, skills and abilities of the users and provide suitable training for them (i.e. learning capabilities) (Ali et al., 2021). For learning capabilities, the same argument applies as with PBCS capabilities. The new consideration here is recruitment capabilities.

Proposition 2: HR learning capability affects the success rate of ECS positively.

6.2.1.3 Functional Capabilities: IT Business Capabilities

The third capability proposed in this research relates to functional IT business alignment capabilities (Badewi et al., 2020; Luftman et al., 2017). IT business alignment indicates the IT department's capacity to understand business goals, business strategies, and the business environment in which the IT department develops plans that fit with the business' needs. The IT policies and plans that aligned with business needs were found to be significant predictors of transformation success and ERP systems in previous research (Badewi et al., 2020). Using the same analogue, this research proposes:

Proposition 3: IT business functional capability affects the success rate of ECS positively.

6.2.2 Requirement

There are three main efforts identified as harming the successful adoption of ECS. These are organisational, IT customisable and configuration efforts, and team delivery efforts and resources.

6.2.2.1 Organisational efforts

Organisational efforts, similar to PBCS, include the clarity and the level of change in policies, rules, responsibilities, accountabilities, structure, and skills and practices to fit

with the new enterprise systems. Due to the level of change is expected to be wider than the functional applications, the significance of these factors in this success is expected to be more substantial. As indicated in the literature, the more organisation fitness aligns with the enterprise system requirements, the greater the success of the implementation (Hong & Kim, 2002; Sykes et al., 2014). Other research found that organisational values, culture and context should fit with the enterprise system's needs (Coleman, 2012) and possibly contradict the Enterprise System "culture", leading to poor implementation of the system (Sykes et al., 2014).

Proposition 4: Organisational efforts affect the success rate of the ECS positively.

6.2.2.2 Customisation and configuration efforts

Enterprise Systems require IT efforts to configure and customise fit with business models (Al-Johani & Youssef, 2013). Previous research has found that customisation has a positive effect on implementation success because they improve level of fitness and congruence (Chatzoglou & Chatzoudes, 2018). Configuration is a much lower effort and can be done in-house, but it is essential for ensuring the appropriate mapping of the organisational processes in the system (Varghese et al., 2020). The last important technical effort necessitates ensuring the system is fully integrated to realise the expected benefits from being an "enterprise" system (Ceci et al., 2019; Chen et al., 2015)

Proposition 5: IT Customisation and Configuration efforts affect the success rate of the ECS positively.

6.2.2.3 Team delivery Efforts

Enterprise systems require special knowledge and expertise that may not be easily accessible to SMEs. Thus, one of the hindrances that may lead to the unsuccessful delivery of ECS is resources. Resources are defined here in terms of the efforts required from consultants to lead the implementation process, which are limited due to the level of sophistication of the skills, and the affordability of retaining consultants after the implementation period. Enterprise systems need expertise that may not be available to IT staff, and are relatively expensive in comparison to SMEs' budgets (Badewi & Shehab, 2016). The affordability of SMEs to hire high profile experts for delivering successful

implementation has been noted in the literature as one of the main challenges for SMEs (Seethamraju, 2008).

Proposition 6: Team delivery efforts affect the success rate of the ECS positively.

6.3 Improving the ECS model (interview research)

The interviews are analysed using word analysis, and it was found that the interviews are dominated by keywords such as “System”, “Business”, “Data”, “Difficult”, and “department”. These keywords (as shown in Figure 6-2) reflect the nature of the cloud ERP applications as more challenging to deploy for SMEs, requiring efforts and resources from the whole organisation to ensure the data is moving smoothly across departments. This requires inevitable changes to business-wide practices. The third group is the ECS which is scalable, customisable and integrative to ensure fitness with organisational needs. The proposed model here indicates three main efforts: soft, technical and resources. The capabilities required are people and technical knowledge.

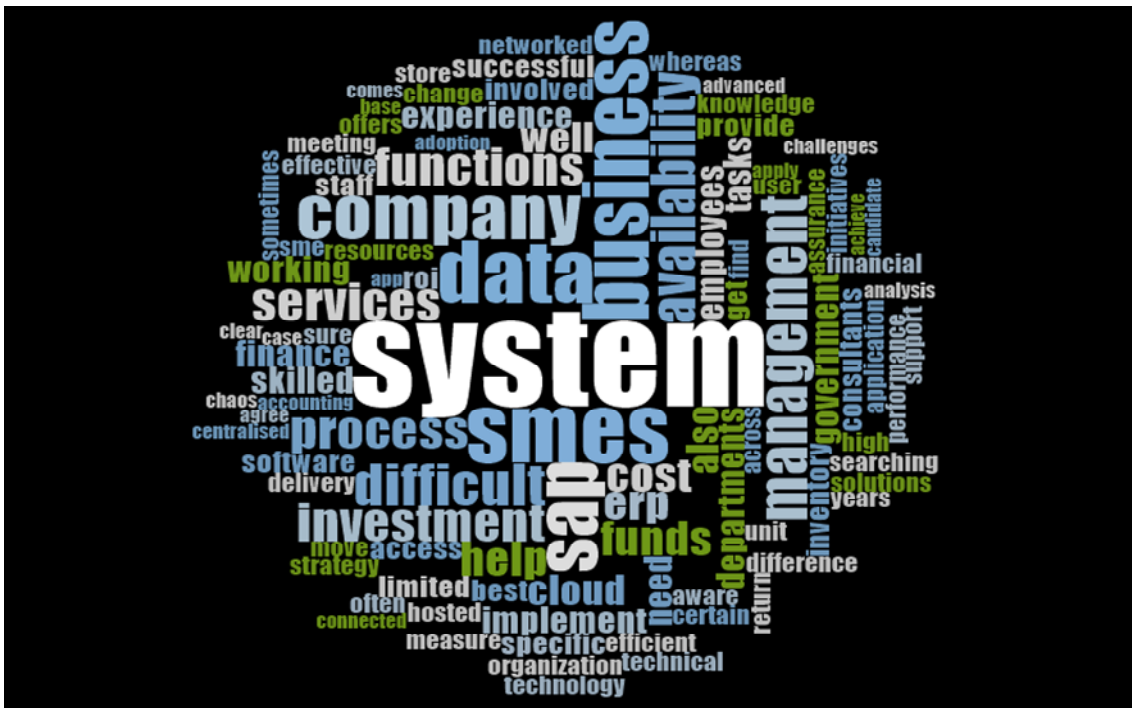

Figure 6-2: ECS Visualised Text Analysis

6.3.1 Technical resources

Enterprise systems are similar to functional application packages in terms of being on cloud available for purchase as software as a service. This endows accessibility and reliability to services, rather than focusing on buying software as a product to be maintained and to serve.

> "*They store data offsite. We don't have to have IT equipment to store our data on site. Usually yes. In terms of management, assurance and reliability yes." SME 46*

Subscribing to the ECS improves the organisation's technical resources in terms of accessibility, storage, analytic power, and integration. The two main features of importance for ECS subscriptions to achieve are full integration and automation and improving the analytic power of the organisation's performance.

6.3.1.1 Full integration and automation

Automating business processes is defined as data being captured from the source and shared and used across the departments of organisations without human intervention.

> *"ERP software integrates and **automates** essential financial and operational business functions, and provides **a single source of data**, including inventory, order and supply chain management and help with procurement, production, distribution and fulfilment." Expert 16*

The first technical resource to emerge from the subscription in ECSs is the integration and synchronisation of company-wide information across departments. This novel capacity allows the business to automate the information flow, which empowers business process performance in response to the availability of time lined high-quality data.

> *"I would say yes. It's **centralised interface** is easy to use and self-explanatory, so all staff can access the system." SME 41*
> *"It is successful for the application my company uses Microsoft Dynamics for, which is to provide a single source of date for inventory and order." SME 54*

Thus, the data is stored once and shared across departments.

> *"G suite - all functions Zoho -inventory, projects, tasks, time keeping. everything is **networked and works well**." SME 47*
> *"SAP is used in our business to manage employees leave system and offers **flexible data sharing tools."** SME 42*

6.3.1.2 Analytic Power

The full integration of systems and automation of business processes improved the quality of the data in terms of accessibility, timeline, and reliability. In addition to these features, the data is consolidated live across departments affording depth and analytics insights. The data analytics offered to these enterprise systems provides intelligence services to decision-makers and supports well-informed decisions.

> *"SAP - Software that develops solutions that help with **effective data processing** Yes very, helps with efficient data processing" Expert 5*
> *"JD Edwards Enterprise for finance and **Power BI** for **financial planning** and **analysis**. None of the data is stored locally unless I download data." SME 48*
> *"From a projects side, the system offers **great analytic data".** SME 54*

6.3.2 Capabilities

There are capabilities proposed from the literature to enhance the probability of success of the ECSs. These are organisational and functional capabilities. This section will review them in light of the findings from the interviews with experts and SMEs.

6.3.2.1 Organisational Transformation Capabilities

Since the scope of change is wider than for functional applications (i.e., PBCSs), the required capabilities are to ensure that the people element can absorb this level of change. Absorptive capabilities are proposed from the literature as significant factors predicting the success of ECS. There is a need for a collective effort to use and integrate these applications to "transform" the organisation as a whole, not as individuals. In terms of the transformation capabilities, the organisation is able to absorb new knowledge efficiently and use it for innovation purposes and when performing new tasks. The interviewees came to validate and agree with this aspect.

> *"Our company is adaptive enough with changes in the environment. We have meetings to discuss possible opportunities and we set plans, and put them into action." SME 55*
> *"Agree with you. Transformation capacity is needed for successful adoption of the ECS." Expert 14*
> *"And you know the company sends most employees even to the EU/Dubai to improve or learn new systems; those who are taken from outside the company and return to the company." Expert 17*

All these examples indicate the organisation's routine efforts (i.e. capabilities) to transform swiftly to garner opportunities in the environment and obtain the capacity to benefit from the opportunities presented by the ECS.

6.3.2.2 HR Functional Capabilities (Learning and Recruitment)

The required HR functional capabilities are deduced from the literature as learning capabilities. These learning capabilities are agreed upon by experts, but the newly discovered one here is recruitment capabilities. One of the successful adopters of ECS stated,

> *"Our HR staff are always looking to select the best candidate when it comes to IT literacy." SME 49*

Enterprise systems demand new job descriptions and specifications for staff, i.e. if the candidate is not familiar with the SAP HANA application, their ability to perform the work as expected becomes a challenge. Thus, HR should be able to redefine the job description and specification to hire the right people to alleviate the transformative and organisational efforts required, due to the implementation of ECS.

> *"Recruiting new employees who are familiar with the technology. Cloud adoption in SMEs is challenging in various ways." SME 42*

6.3.2.3 Organisational IT Department resources

The IT capability required for the effective adoption of ECS is business alignment. The reason for this is the nature of configuration required, as enterprise systems cannot be readily configured by users because of their complexity and technicality. Thus, IT managers must have a strong relationship with business users to understand their requirements and configure the system to maximize the value of the system.

> *"Business units such as top management should talk more with IT as confusion arising from these departments could cause chaos." Expert 8*
> *"They know what they're doing, and they apply their practical knowledge to the systems, we have meeting each morning with IT to make sure the staff are motivated, and we have a meeting at the end of the day to make sure the IT-Business tasks were executed." SME 43*

6.3.2.4 Financial Capabilities

Enterprise systems are costly and require special skills, which may not be affordable for SMEs. Unlike PBCS applications, which are not customisable or integrative, this type of application is customisable, although it is too expensive to customise, reducing the need for manual work to connect different applications. Indeed, it represents a silver bullet for SMEs, but the cost is perceived as significant and unaffordable by most SMEs.

"We have many systems and for sure we encounter lot of effort tracking all, but that is better than paying 2 million, and unfortunately we just don't have the funds." SME 47

Although it is paid by users monthly, the cost is perceived as unaffordable, and organisations are seeking to avoid this because the perceived benefits from it are much lower than the price paid. Moreover, in SMEs, several pieces of work can be completed with a combination of PBCS and DCS applications.

There is a substantial investment required for successful completion of the deployment of the ECS project. There is also a need for resources in terms of financial ability to secure funds. This ability does not only come from having direct access to cash but also the ability to write up a proper business case. Thus, SMEs should be aware how to realise the benefits from the ECS and develop a business case and clear benefits realisation plan to match this investment.

In Saudi Arabia, there are government funds for enabling digitalisation of SMEs, such as the Kafalah fund. However, few of the participants are aware of these. They require someone who knows about them and has the ability to successfully apply and get funding to support the implementation process. Thus, the ability to search and apply for funding could be a significant capability reducing the resources challenges for successful implementation of the ERP system.

"Searching the available government funds would make a difference." Expert 11
"Government does support IT initiatives but to my knowledge not many SMEs are aware of that." Expert 9

The second capability required is a financial decision making one. This informs SMEs of the financial resources necessary to fund IT projects. One of the main challenges facing SMEs is the inability to secure funds to ensure full implementation. A full enterprise system could take one year or more to fully implement, which may put SMEs under financial pressure to keep funding them. Thus, the appropriate planning for financial resources for funding the whole enterprise system project is one of the keys to successful delivery in the SME context. Additionally, one of the main challenges facing enterprise systems is the inability to articulate the financial benefits arising from the system, putting it at a disadvantage when compared to the other projects and programmes available on the strategic agenda, which led to premature closure of the enterprise application.

*"Investment – it's difficult to sometimes make a **business case** as to why you should implement a new IT system. Often the prices are very high, and it can be extremely difficult to determine the return on the investment." Expert 16*
"I agree that it is difficult for SME owners to point out a clear ROI while investing in cloud services for SMEs." Expert 2
"Some SMEs find it difficult to measure the ROI for their new IT investments." Expert 17
"Some SMEs are not investing at this level because they cannot estimate the potential financial return from it." Expert 4

Thus, measuring the ROI for the new IT investment is perceived as one of the critical capabilities required for successful delivery of ECS. The last financial capability required is "developing business cases for new IT investments". An appropriate business case could set benefits owners and accountability for realising the potential of the system. Thus, the financial capability could reduce the negative effect from the lack of access to special resources for successful implementation of ECS, because this involves setting the financial accountability for the implementation and demonstrating value for the senior management on the completion of the system. Moreover, it helps to find suitable external finance opportunities to fund the acquisition of these critical resources.

6.3.3 Requirements

Successful deployment of ECS applications necessitates either organisational change, software changes or both. Based on interviews and experts' judgment, suitable action is to change the organisation and the software (i.e., customisation and configuration) rather than changing only one. The benefits attained will be realised only when business practices change, i.e., organisational practices need to be changed. Additionally, the software should be fit for the purpose to achieve the organisations' transformation objectives. Thus, the best option is to change both for successful delivery of the required benefits. This research argues that the greater the efforts spent on these changes, the higher the level of success that will be realised.

6.3.3.1 Organisational Transformational efforts

ECSs requires significant efforts from the organisation to be restructured and re-fitted to ensure the enterprise system is optimised, and the required value realised. Thus, there is an organisational effort to ensure the level of change is suited to the needs of the new

system. Thus, the organisational and transformative efforts are found by experts to be essential, although many disagree with the individual efforts.

"A software with more functionality means can deliver more services." Expert 12

Individual efforts are rejected by experts because they revealed that enterprise systems require collaborative work and are not a "one-man show". Individual efforts are meaningless if they are not framed in an organisational context. Thus, individual efforts are removed from this research as effort is required for the ECS, and organisational efforts indicate collective guided individual efforts towards successful implementation of the application. Thus, organisational, and transformative efforts are only included here.

Organisational efforts, similar to PBCS, include clarity and the level of change in policies, rules, responsibilities, accountabilities, structure, and skills and practices to fit with the new enterprise systems. As the level of change is expected to be wider than for functional applications, the significance of these factors is that success is expected to be more substantial. Moreover, there are other elements of organisations that need to be considered here, which are organisational strategy, vision, and mission, culture, resource allocation and the organisational planning process.

> *"The change in our firm was about everything, the effort put into making the application succeed was substantial, all stakeholders must be involved, and collaboration is needed within and across the firm." SME 45*

Organisation strategy, vision, and mission need to be adapted to reflect the new digitalised business identity, to continue successful implementation. One of the main challenges facing enterprise systems is that the current strategy, vision, and mission are incompatible with enterprise systems. For instance, if the organisation's vision focuses mainly on the internationalisation of the markets, despite the importance of this vision, organisational resources may be more focused on opening new markets, with fewer resources dedicated to successful implementation. Enterprise systems need an engaged approach to ensure everyone is involved in the process, which will never happen if the organisation's vision, strategy, and mission are reconfigured to fit with this.

> *"We have SAP in the company, of course it is an integrated platform program and is considered one of the best applications in the market. We are proud of deploying the App because our vision is to be leading in our industry." SME 43*

Culture could be a strong hindrance or enabler when deploying the system. For instance, routine culture is dominated by efficiency and continual repetition of the same tasks. Enterprise systems may require significant changes in business practices, which disrupts repetition culture.

> *"We had to take a more serious approach, over which some were not happy with the decision, but that's our company strategy now." SME 53*

Thus, the differences between the culture required for the successful delivery of the enterprise system and actual culture values and norms could indicate a challenge to the successful implementation of the enterprise system.

Moreover, a new aspect reported in the qualitative research relates to the resource allocation model. Resource allocation focuses on the process of distributing organisational resources over departments and functions. The level of change associated with this resource allocation imposes political issues among departments and functions, which could generate significant resistance to the implementation. This factor is identified in the interviews.

> *"Some SMEs need high levels of reporting across departments, and they need to allocate resources in the organization in order to be ready for the implementation." Expert 16*
> *"How the budget is allocated is a source of power for many; any change in this allocation will be met with resistance from everybody." Expert 12*

The last aspect of the organisation's efforts is the planning process. Enterprise systems are based on well-predefined steps for fulfilling each of the functional activities (e.g. marketing, purchasing, inventory stocking, and accounts). The system is perceived to be restrictive with regard to the functions available to perform its activities, requiring proper forward planning. Thus, due to the nature of SMEs, the nonexistence of a planning system could be a significant hindrance for the department heads, because the expected effort in terms of creating plans using the planning systems available in the enterprise systems could be substantial for them. Thus, the level of change in the planning system fits with the enterprise system requirements and is proposed to be one of the organisational efforts required for successful implementation of ECS.

> *"SAP New system. Only in 1 year. I find it is not very user friendly, I prefer the old system, tasks are well structured, but this means we only follow predefined rules." SME 46*
> *"SAP - does the job but not great. Not for purpose, no - too many steps involved in certain processes." SME 50*

6.3.3.2 Customisation/Configuration efforts

Three technical efforts emerged from the literature as vital for successful enterprise implementation. These were customisation, data integration, and configuration. Data integration and configuration are believed by experts to be useful and relevant, but customisation was found to be an impractical option. With the exception of a few large organisations, SMEs are not expected to have access to customisation of the application.

> *"Usually ERP systems like SAP, they are standard SAP system; SMEs have to understand the accompanying challenges and costs in order to customise the system." SME 49*

Customisation is removed from the proposed factors. Integration and configuration are embraced by experts as both significant and important. Enterprise Systems are easier than functional systems to integrate but necessitate special skills for appropriate customisation. Integration is easier because the enterprise system is a single system with a different functional application that has an integrative cloud database.

> *"The volume of the data was substantial; thus it was tiring in inserting data for the system SAP for example as soon as you enter the name of a new employee immediately you get a copy with the finance because of the salaries and a copy with the sales for the other companies for who makes a recession to order and, in the contour, it is all connected to each other" SME 41*

Customisation differs from configuration. While configuration can be performed by internal IT managers or superusers, customisation requires programming skills that may not be available to SMEs and costs a significant amount of money above the budget of SMEs. Thus, the level of configuration and integration perceived can be understood as technical efforts required to deliver the transformation successfully.

6.3.3.3 Delivery Team Efforts

ECS is much more complicated than DCS and PBCS. Moreover, for PBCS, there is a service provider which offers all the required functionality. For ECS, there is a need for customisation and adaptation processes, and for enterprise systems to fit with the special needs of the organisation. There is an optimal level of change in the organisation and an option to customise the application. The determination of this optimal point is unknown to SMEs with their limited resources.

"SMEs have limited resources, a lack of funding, innovations and are not technologically advanced." Expert 10
Unfortunately, at the moment, my company is having teething issues with getting some aspects of it to play nice, not to mention the cost involved in the implementation phase." SME 44

Thus, there is a growing need for special and technical resources to assist the implementation process, requiring more than service provider support and help. Indeed, the selection process for the right enterprise system requires a specialised paid consultant to offer assessment and assistance to select the right application. The selection process requires significant amounts of resources. Similarly, the implementation process requires change management competencies and skills that may not be available to the organisation, necessitating the appointment of a special programme manager to lead the transformation process.

"Delivery process worries concern SMEs, as does the availability of the cost / skilled consultants to deliver the system." Expert 8

Moreover, consultants are required at the post-implementations stage to ensure the benefits realisation process is followed as required. At the post-implementation stage, consultants assist with the benefits audit process, guaranteeing accountability to realise the expected benefits. Enterprise systems require deliberate plans and actions to realise value, because they are expensive, and justification is required for such an investment.

"The availability of the skilled consultants, whereas the technical experience is also limited and if found, they are costly." Expert 3
"A lot of data analysis and manipulation is done outside of the system on spreadsheets and then uploaded back into the system." SME 52

6.3.4 Business value

There are two aspects to business value; perceptions towards it with an intention to use and benefits. Thus, the business value is broken into TAM factors and benefits, e.g. perceived ease of use and usefulness when used.

6.3.4.1 TAM and USE

The first indication of successful adoption of services is "use". Without use, there are no benefits to recoup. Use and TAM are not synonymous. They are two distinct constructs in relation to ECS that affect each other. Where TAM relates to perception, use is

behaviour, as emphasised by the four experts. Use is an outcome of perception and attitudes towards a particular service. Thus, for the system to be successful it must be perceived as easy, useful and available to use:

> *"Yes - it provides a secure solution and is very simple yet effective. Many colleagues disclosed how straight forward the onboarding process was when they joined." SME 55*
> *"We use SAP by Design; it is user friendly with very specific uses that are readily achievable." SME 45*

6.3.4.2 Benefits

Business value, i.e. benefits, are realised only when business processes are altered to establish the best use of the technology. ECS benefits include faster decision making, fewer mistakes, improved efficiency, and enabling the organisation to grow faster as shown in Table 6-1. The main value derived from the application comes from the integration of services and the use of data analytics. The integration of services will provide data quality in terms of availability, accessibility, accuracy, timeline, and cross-functionality. The quality of organisational information improves the decision-making process in terms of being faster and cheaper, reducing the number of mistakes, the efficiency of the operations, and enabling organisations to grow faster and more easily.

> *"ERP cloud Adoption is a strategic move by organisations of reducing cost, mitigating risk and achieving scalability of data base capabilities. ERP magnitude and the depth of change it is likely to bring within an SME is huge. the depth of adoption yields insight into the maturity of best practices, enterprise-ready cloud services availability" Expert 6*

Table 6-1: ECS Perceived Benefits

Aspect	Reason	Evidence
Faster Decision Making	Organisation becomes faster, easier and cheaper because of the immediate access to high quality data.	*"It gives us a **quick access to accurate reports** that makes **a faster decision-making** ability." SME 50* *"We use Oracle ERP to consolidate all info and material in one place for **better decision-making."** SME 51* *"We use Microsoft Dynamics to help manage a multitude of things, such as stock management, sales and finances. This ensures employees across the organization are **working with the same data**, no matter the business unit or location, and can make decisions faster and more confidently." SME 55*
Fewer Mistakes	Quality data helps the right and well-informant decision to be made	*"The success is defined by the smoothness and lack of stock-related problems we have." SME 47*
Efficiency	Data moves smoothly across department improves the operational performance in terms of reducing redundancy activities.	*"It **enables us all to perform our daily functions efficiently** and monitor each other's work" SME 44* *"It is used every day and has made the tasks a lot more efficient" SME 54*

Growth	Accessibility, quality of data, and centralised database	*"It offers database storage options, computing power, content delivery, and networking to help **organizations scale up** in a **centralized** way." SME 52* *"With the system, the organisation has grown to over 200 locations in the, each unit can get it's own financial performance as **well as roll ups into regions** and **headquarter reporting**. Finance is very **centralised** and more productive." SME 48*

6.4 Examining the ECS model (survey)

The aim here is to examine and generalise the findings from the literature, with additional details provided by the interviews. The questionnaire was distributed to 127 SMEs in Saudi Arabia. The section is structured as follows, the first section aims to define construct validity and reliability for the research constructs. The second section presents a descriptive analysis of the questionnaire. The third section presents the structure equation modelling results to illustrate evidence proving the relationships.

6.4.1 Questionnaire Design

The questionnaire is developed from the literature review and improved on in the interviews. There are eleven research constructs: success (TAM, Use, Investment success), team delivery resources, organisation requirements, BPR requirements, Finance capabilities and HR capabilities, transformation organisational capability, IT business alignment and integration. Success was measured similar to PBCS previously. The scale was found to be reliable, as shown in Table 6-2, the Cronbach Alpha for the three sub-success factors are: TAM, the USE and the investments are (.81), (.88) and (.81) consecutively, Composite Reliability (.91), (.92) and (.91). and Rho_A (.81), (.88) and (.82). The fourth construct is Human Resources' learning and recruitment, which are measured by five items. This scale is found to be reliable because the Cronbach's Alpha (.87), CR (0.90) and Rho_A (.89), which are more than 0.6 the cut-off point. It is also valid as the AVE (.65) is more than 0.5, and all the factor loadings of the items constituting this construct are greater than 0.6.

Transformation capacity included three items from the literature as identified previously (P97) and was found to be relevant by the qualitative research. These items were used by employees to absorb new knowledge and prepare it for further purposes and make it available, the employees successfully linked existing knowledge with new insights. Our

employees are able to apply new knowledge in their practical work. The scale was found to be reliable because Cronbach's Alpha (.84), CR (.90) and Rho_A (.82) are more than 0.6 the cut-off point. Similarly, the construct is valid as the AVE (.74) is more than 0.5, and all factor loadings of the items constituting this construct are more than 0.6.

The sixth construct is IT integration, which is measured by two items: Integrating with different clients and vendors and integrating with other applications in the organisation. The scale was found to be reliable because Cronbach's Alpha (.91), CR (.95) and Rho_A (.91) are greater than the 0.6 the cut-off point. Validity of the construct is assured as it is more than the half, which is .91.

The seventh construct, BPR effort, is measured by three items from the literature similar to PBCS. This scale is found to be reliable because Cronbach's Alpha (.81), CR (.89) and Rho_A (.83) are greater than 0.6 the cut-off point. The construct passed the valid test as AVE is .72.

The eighth construct is Finance capabilities, which have four items. The scale ascertained to be reliable as Cronbach's Alpha (.73), CR (.83), and Rho_A (.74) is more than the 0.6 the cut-off point. It is also valid as the AVE is .55.

The ninth construct is organisational requirements, and is similar to DCS and PBCS, and is added two more items which are: organisation structure (easy and understandable, flat versus tall) and resource allocation within the organisation. This scale is found to be reliable because Cronbach's Alpha (.91), CR (.92) and Rho_A (.91) is more than the 0.6 the cut-off point. The AVE validity is .91 is more than the 0.6 the cut-off point.

Team delivery resources, two items found to be reliable as Cronbach's Alpha (.78), CR (.90), and Rho_A (.78), are greater than 0.6 the cut-off point. The construct validity was approved as AVE is .82. Finally, IT business alignment is measured by four items from the literature: IT plans reflect the business plan goals and IT plans to support business strategies, e.g. Consistency of IT policies throughout the enterprise in our firm is better than that in other firms in our industry and IT evaluations in our firm are better than those in other firms in our industry. This scale is found to be reliable because Cronbach's Alpha (.86), CR (.90) and Rho_A (.87) are greater than 0.6, the cut-off point. It is also valid since the AVE is .69.

Table 6-2: Confirmatory Factor Analysis (CFA) For ECS

Construct	Items	Loadings	α	Rho_A	CR	AVE
TAM	Easy to use	0.916	0.81	0.81	0.91	0.84
	Useful	0.919				
USE	Most of employees are using it	0.905	0.88	0.88	0.92	0.80
	I use it most of the time	0.877				
	Most of employees are satisfied with it	0.902				
Investment	It gets the expected ROI	0.906	0.81	0.82	0.91	0.84
	My organisation sees it as an asset	0.927				
HR. (Learning and Recruitment)	Ability to deliver the appropriate training courses.	0.898	0.87	0.89	0.90	0.65
	Effectiveness of responding to training needs.	0.844				
	Knowledge of effective training.	0.843				
	Considering IT literacy in the recruitment process.	0.725				
	Considering the weakness in IT is not acceptable for selecting a new job candidate.	0.716				
Transformative Capacity	Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available.	0.861	0.83	0.82	0.90	0.74
	Our employees successfully link existing knowledge with new insights.	0.897				
	Our employees are able to apply new knowledge in their practical work.	0.830				
Configuration	Level of configuration of the system (i.e., changes in the fields interface)	0.865	0.83	0.84	0.90	0.75
	Level of reporting customisation	0.806				
	Number of customised reports	0.923				
Integration	Integrating with different clients and vendors	0.960	0.91	0.91	0.95	0.91
	Integrating with other applications in the organisation	0.952				
Delivery Team Resources	Diversity of skills required to deliver it	0.901	0.78	0.78	0.90	0.82
	Cost of the skilled consultants to deliver it	0.910				
Organisation Resources	Organisational policies and rules (simple and understandable by everybody)	0.791	0.91	0.91	0.92	0.63
	The clarity of the roles, responsibilities, and accountabilities	0.802				
	The reporting across departments	0.830				
	The organisation structure (easy and understandable, flat versus tall)	0.791				
	The resource allocation in the organisation	0.813				
	Employee's skills	0.822				
	Employee's practise	0.743				
IT Business Alignment	IT plans reflect the business plan goals.	0.822	0.86	0.87	0.90	0.69
	IT plans support the business strategies.	0.823				
	Consistency of IT policies throughout the enterprise in our firm is better than that in other firms in our industry	0.849				
	IT evaluations in our firm are better than those in other firms in our industry.	0.841				
Finance Capabilities	Getting the financial resources necessary to fund IT projects.	0.794	0.73	0.74	0.83	0.55
	Measuring the ROI for new IT investments.	0.792				
	Securing the government funds for supporting company operations (e.g., Kafalah).	0.719				
	Searching the government funds for supporting company operations.	0.665				
BPR	Business Process Re-engineering efforts	0.881	0.81	0.83	0.89	0.72
	The significance of the BPR disruptions of the current operations	0.870				
	Time required to complete BPR successfully	0.802				

6.4.2 ECS Descriptive Analysis

Descriptive analysis indicates that the most common aspect of success is TAM (Ease of use and usefulness), with scores of 5.61 and a standard deviation of 1.67, indicating that cloud business function applications are successful for SMEs. The second level of success concerns "use" (5.56), which is slightly lower than TAM. The justification here could be that organisations with a higher TAM will have higher Use, as the correlation is .799 (*P<0.01*). Interestingly, the level of investment success is significantly lower than any of them, and lowest across all the figures in the data set, to be indexed at 4.53, indicating the discrepancy between positive attitude to use and investment return from ECS. The highest prevailing factor in the data is financial capability, with a score of 5.26. This indicates the importance of having financial capital to support financial planning, writing business cases and applying for funds.

These factors are probably the most important to SMEs in Saudi Arabia seeking to get a subscription for an application. The correlation (as shown in Table 6-3) with aspects of success is significant but limited compared to other factors. The correlation with TAM, Use, and investments are .295 (*P<0.01*), 251 (*P<0.01*), 280 (*P<0.01*), respectively. The most important factor for TAM, Use and Investment success are IT Business alignment (*r= .60, P<0.01*), (r=.56, P<0.01), and (*r= .48, P<0.01*) and HR capabilities (*r= .53, P<0.01*), (*r=.62, P<0.01*) and (*r=. 56, P<0.01*). This indicates that the perception of ease of use and usefulness, and use behaviour are highly dependent on the functional capabilities of the organisation in terms of its relationship between IT and business users (i.e. IT Bus. Alignment) and HR department and involvement in the IT as criteria for recruitment and searching for weaknesses in skills and abilities in IT. Finally, configuration is not correlated with success, while team delivery is important for success and also related to BPR (*.44, P<0.01*) and organisational efforts in the transformation (*.59, P<0.01*). This indicates the importance of having a delivery team that could improve the level of success by helping with the introduction of BPR and organisational efforts at transformation.

Table 6-3: Correlation Analysis for ECS

	$\bar{x}$	σ	$\bar{x}-4$	1	2	3	4	5	6	7	8	9	10	11	12
(1) TAM	5.61	1.67	1.61**												
(2) USE	5.56	1.60	1.56**												
(3) INVST.ROI	4.53	.901	0.53**												
(4) BPR	4.72	1.47	0.72**	.44**	.47**	.36**	1								
(5) ORGA3	4.48	1.42	0.49**	.42**	.44**	.42**	.55**	1							
(6) Team Delivery	4.61	1.44	0.61**	.35**	.44**	.37**	.44**	.59**	1						
(7) Config	5.13	1.73	1.13**	.13	.10	.11	.11	.12	.10	1					
(8) HR.CAP	5.08	1.19	1.09**	.52**	.62**	.55**	.49**	.52**	.55**	.09	1				
(9) FI.CAP	5.26	1.03	1.27**	.29**	.25**	.28**	.20*	.14	.26**	.021	.52**	1			
(10) TRANSFO	5.13	.921	1.13**	.45**	.40**	.31**	.27**	.18*	.21*	.45**	.37**	.44**	1		
(11) IT.BusAlign	4.84	1.12	0.85**	.60**	.56**	.48**	.33**	.32**	.26**	.39**	.39**	.13	.45**	1	
(12) Integration	4.61	1.44	0.61**	.35**	.44**	.46**	.44**	.59**	.53**	.102	.37**	.15	.25**	.16	1

**. Correlation is significant at the 0.01 level (2-tailed).

6.4.3 Structural Model Assessment

The SRMR for the model is 0.062, indicating the suitability of the model to fit the data (i.e., model fitness). The R2 of the dependent variables are significant and accepted. They are 39.9%, 48.6%, and 34.1% for the Investment success, Use, and TAM. as shown in Figure 6-3.

The results of the quantitative analysis indicate that all the proposed factors affect the success of the ECS except for configuration, which does not have any significant effects. TAM, which is explained as 34.1% by these factors, is the most affected by BPR ($\beta = .257, P < 0.01$), then organisational efforts ($\beta = .219, P < 0.01$) and Financial Capabilities ($\beta = .182, P < 0.01$).

All the figures are significant (P<0.01), indicating the evidence is significant enough to be accepted. The factors affecting use, which explain 48.6% of the variation in the data, are, by order of impact, team delivery resources ($\beta = .424, P < 0.01$), HR capabilities ($\beta = .257, P < 0.01$) and IT Business Alignment ($\beta = .199, P < 0.01$). The configuration does not have a significant effect and is thus removed from the research model.

All other factors are significant (P<0.01). Investment success is explained by variation of 39.9% and is affected mostly by the transformative capabilities ($\beta = .602, P < 0.01$), and then Organisational efforts ($\beta = .333, P < 0.01$) and least by IT integration capabilities ($\beta = .316, P < 0.01$). All these figures are significant enough to be accepted, as tabulated in Table 6-4.

Table 6-4: Path Coefficient for ECS

	(O)	(M)	(STDEV)	T Statistics	P Values
TAM (R^2 = 34.1%)					
BPR	0.257	0.259	0.076	3.396	0.001
IT Business Alignment	0.229	0.226	0.081	2.842	0.005
Organisational Efforts	0.219	0.229	0.079	2.775	0.006
Financial Capabilities	0.182	0.203	0.061	2.959	0.003
Use (R^2 = 48.6%)					
Team Delivery Resources	0.424	0.421	0.083	5.087	0.000
HR Capabilities	0.240	0.239	0.069	3.473	0.001
IT Business Alignment	0.199	0.207	0.074	2.707	0.007
Configuration	0.103	0.110	0.072	1.429	0.154
Investment Success (R^2 = 39.9%)					
Transformative Capabilities	0.602	0.580	0.112	5.378	0.000
Organisational Efforts	0.333	0.345	0.077	4.348	0.000
Integration	0.316	0.294	0.088	3.580	0.000

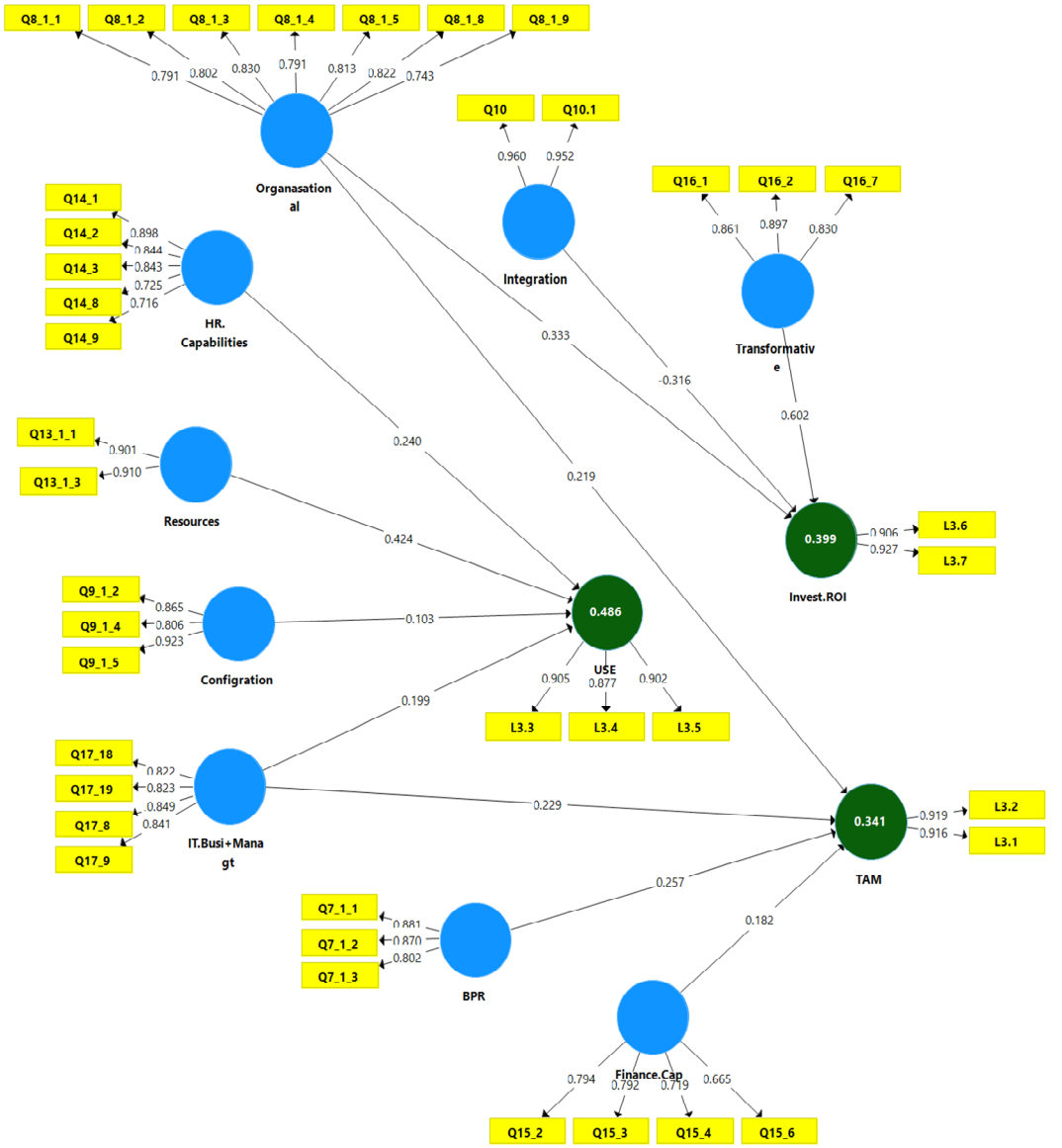

Figure 6-3: PLS Results of ECS (n= 127)

6.5 Enterprise Cloud Services (ECS) Model

The main generic ECS model developed from the literature consists of technical resources, capabilities, transformation requirements and success. The literature review was used to deduce and operationalise each of these constructs on the enterprise cloud computing services. The interviews were used to validate these constructs and accept new constructs and enhance the previously determined definitions. The questionnaire was designed to test the final version of the items on the success. As shown in Table 6-5.

The technical resources for the enterprise systems concept were synthesized from the literature to denote customisability, scalability, integrability, intractability, and enterprise-wide application, to fulfil multiple business tasks simultaneously. The qualitative research agreed on these definitions and added new dimensions, which are accessibility, analytic power, full integration and automation. The aspects constitute the definition of the technical resources of the enterprise services.

Capabilities have been deduced from the literature as organisational and functional capabilities. These organisational capabilities are operationalised into exploitation and transformation absorptive capacity, while the functional capabilities are defined as IT business alignment and HR management (learning and recruitment). The qualitative researcher agreed with the literature about transformation absorptive capacity only, and quantitative researchers observed a significant effect on the success of enterprise cloud services. Qualitative and quantitative research has agreed with HR management learning and recruitment capabilities. The qualitative aspect led to the addition of finance capabilities (decision making & secure funding) as there was a substantial investment required for successful completion of the deployment of the ECS services project, and there are resources required in terms of financial ability to secure funding.

Success in the literature has been attributed to intention to use, ease of use and perception of usefulness, as inherited from TAM. However, based on qualitative research, the perceptions are elaborated more to define the benefits for users. Success is defined according to ease of use and usefulness (TAM dimensions (Davis, 1989)) and the benefits which come from the appropriate usage of them. The benefits defined in the qualitative

research as improvements are faster decision making, efficiency and fewer mistakes, and business growth. The quantitative research improved the definition, so that it can be quantified and scaled for the purpose of testing the effects on success. Success is described by three distinctive constructs: TAM, Use, and Investment. Investment success only comes after use, and use comes after the TAM. However, they do not happen at the same time, as TAM does not guarantee use and use does not guarantee investment success, i.e. the ease with which services can be used is not the only factor employed to explain use, and usage alone without changes to business practices do not lead to investment success.

Table 6-5: Evolvement of the ECS Model

	Literature Review	Qualitative	Quantitative
Technical Resources	customisable, scalable, integrated, interactable, and enterprise-wide application to fulfil many business tasks at the same time	accessibility, storage, analytic power, and full integration and automation	
Capabilities	IT Business alignment		
	Organisational Absorptive Capacity (Exploitation and Transformation)	Transformation capacity only	
	HR Capabilities (Recruitment and learning)		
		Finance capabilities (decision making & secure funding)	
Transformation Requirements	Organisation Requirement (alignment of the enterprise services vision with organisation values and culture)	Organisational Requirements (Alignment of the enterprise services vision with the organisation strategy, vision, and mission, culture, resource allocation and the organisation planning process.	
	Transformation Efforts (Business Process Re-engineering)	Like literature the new aspect here is the perceived risks related to the business process reengineering	
	Individual efforts	XX*	
	IT Requirements (Customisation, Configuration)	Only configuration	XX*
	Integration efforts		
		Team delivery resources	
Success	Usage, ease of use and usefulness	TAM	TAM and Use
		Benefits (Efficiency & Fewer mistakes, Faster Decision making, and Growth)	Investment

* XX indicates construct's rejection

The final model, as with the other models, is established according to five main concepts: technical resources, capabilities, requirements and perceived values and outcomes. As illustrated in Figure 6-4. This set of services categories are characterised by analytic power, full integration and automation, accessibility, and secured online storage. These

features are then conceptualised as technical resources. These resources can lead to positive outcomes and benefits only if the organisation accommodates them well. Thus, there are a set of routines (i.e. capabilities) in place in the organisation to ensure the successful assimilation of enterprise services in day-to-day routines. These are organisational capabilities in terms of transformation capabilities and functional capabilities in terms of HR learning and recruiting capabilities (i.e. HR Functional capabilities), IT business alignment capabilities (i.e. IT functional capabilities) and financial decision making and securing fund capabilities (i.e. Finance functional capabilities). Besides these capabilities, there are interventions and specific needs for actions or resources required at the time of implementation and adoption (i.e. requirements). The requirements are arranged into integration requirements, organisational requirements, business process reengineering and the quality of the delivery team of the enterprise services. In the case of the existence of these capabilities and requirements, the expectation is of perceived benefits in terms of faster decision making, efficiency and fewer mistakes, and growth. These benefits are translated into positive perceptions towards the enterprise system in terms of ease of use and usefulness (TAM), use behaviour, and ultimately the organisation's perceived investment success as measured by ROI.

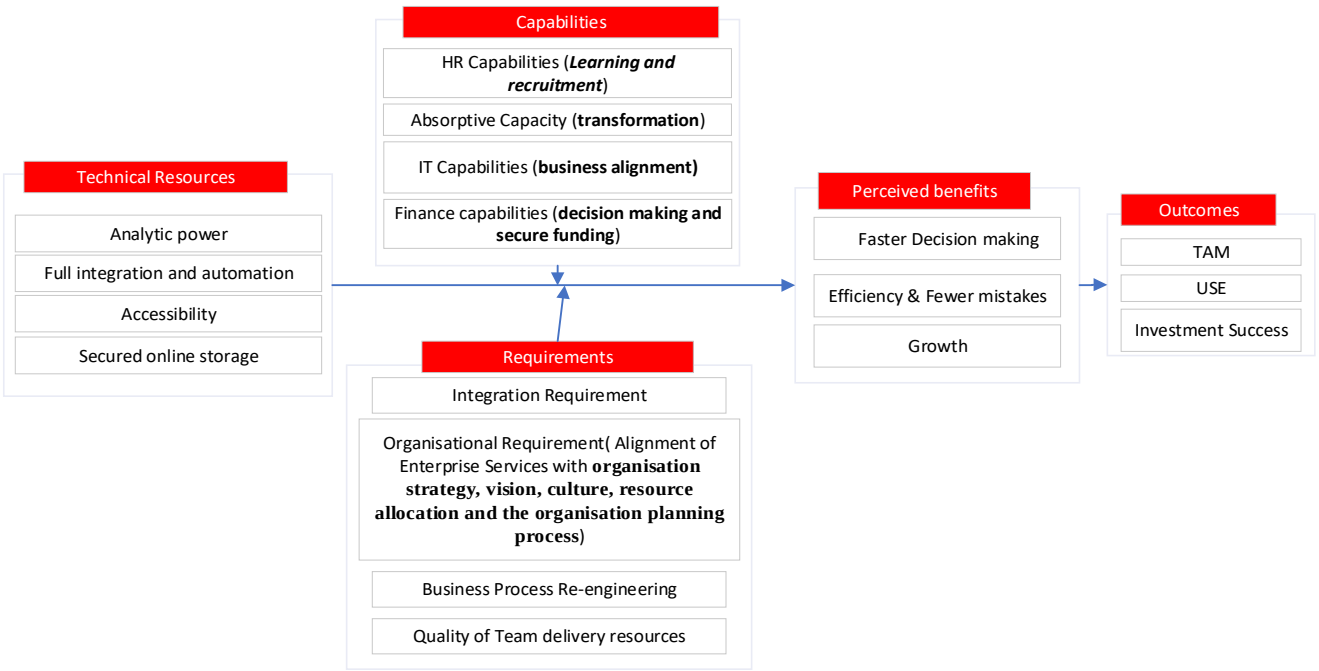

Figure 6-4: ECS Final Model

6.6 Summary

The aim of this chapter was for defining the model of enterprise cloud services and to define the capabilities and requirements for recouping the proposed benefits from these investments. To fulfil this objective, the literature has been synthesised to deduce and extrapolate the definitions and aspects. The expert interviews were conducted to validate, and a questionnaire was distributed to examine these factors. Through this pragmatic research paradigm, this research has defined five aspects of the technical resources, four aspects of the requirements, and four aspects of the organisational capabilities. The benefits are defined into three main categories (i.e. faster decision making, efficiency and few mistakes, and growth). The final outcomes are broken down into ease of use, usefulness, use and investment success.

Chapter 7 : Framework Development and Validation

7.1 Introduction

The aim of this chapter is to consolidate the three models developed in Chapters 4, 5 and 6 into a single framework. Consolidation will help organisations to see the whole thing from a single point and conclude the research into a single framework to explain the variation in success in different groups of BCSs. This framework is operationalised in this chapter into a readiness matrix to help companies to assimilate different cloud services successfully. Section 7.3 is dedicated to the development of the tool out of the framework. Section 7.4 is for case study research to validate the framework and the readiness assessment tool.

7.2 Business Cloud Services (BCSs) Framework Development

The research framework is developed by consolidating three models (i.e. Digitalisation, Packaged, and Enterprise). The research framework is aligned and extends the basic one developed in the literature review chapter (Section 25.4). The framework consists of technical resources (What the technology can do), capabilities (the organisational routine before the implementation to host the new services), requirements (what the SMEs shall do in the implementation – i.e. interventions), and benefits (what the SMEs will get from the technological resources). As seen in Figure 7.1, the aspects of the framework, on the left-hand side, are technological resources, capabilities requirements, and benefits. The types of business cloud services, on the top, are DCS, PBCS, and ECS. The blue, the right-hand side, defines the interview questions. For instance, the what the technology can do question, is conceptualised into technical resources which are different based on the type of the business cloud computing services used.

7.2.1 Technological Resources

The ontological taxonomy of the services leads to a deeper understanding of the requirements and capabilities required, such as the benefits required. Digitalisation mainly involves unstructured data, which gives the individuals in SMEs the freedom to change them to fit their individual needs, while enterprise systems are highly structured,

which does not provide much space for the organisation to customise the business processes inherited in the system. In the middle, the packaged functional application is not flexible, affecting only one department and one function.

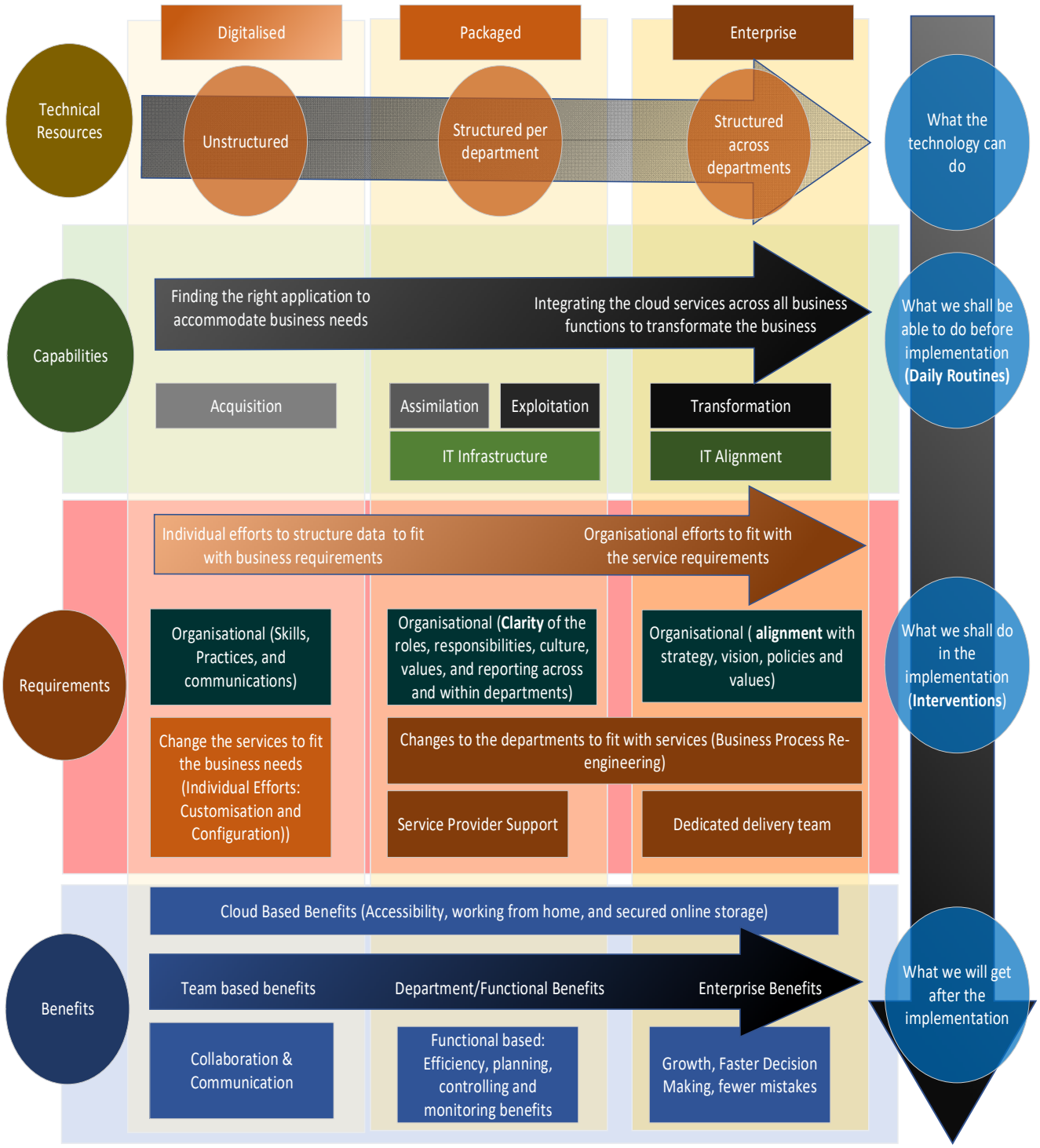

Figure 7-1: Business Cloud Services (BCSs) Framework

7.2.2 Capabilities

The digitalisation process requires the organisation to have the capacity to identify the service best aligned to its individual needs so that there is no requirement to maintain IT capabilities. In other words, individuals should be able to acquire knowledge regarding cloud services from the marketplace so that they can select the service most convenient to them. At the other extreme is the enterprise system, which is highly structured, and organisation based, affording an organisation the capacity to transform itself to fit templates defined by the enterprise services. The IT capability here mainly concerns the alignment of the business without changing the application; thus, it involves advising business users to change to fit within relatively rigid service needs. In between the packaged application, which is rigid at the functional level but only affects this department, the IT capacity required to integrate the services and platforms across different functions is designed to fit with SME needs.

In other words, the full customisation of services to fit with individual needs is digitalised, while the enterprise system is fully adapted to the organisation, and fits with software requirements/in-between existing packages, giving the SME the option to reconfigure the integration between the services to fit with the SMEs requirements; although, at the same time, the department must be rewired to fit rigid functional service needs.

7.2.3 Requirements

The nature of each group of services enforces a set of requirements that existed during the implementation phase. Since digitalisation is more individually based and flexible according to individual or team functions and routines, organisational requirements mainly relate to individual skills, practices, and communications that can be amended to customise unstructured data flow in digitalised services. Thus, the intervention required here is mainly due to individual efforts to customise, configure and utilise the flexible unstructured data platform so that it can be structured and aligned with individual, or team needs. At the other extreme, enterprise services mainly require the whole organisation to be altered to fit with the needs of the service. Therefore, organisational requirements need to align with the SME strategy, vision, policies and values for a successful adoption to occur. In between is the packaged applications, there is no requirement to change the

entire organisational strategy or values; however, which ones require reconfiguration must be clarified. The focus is not on whole organisations, rather departments; thus, the circles of accountability and responsibility should be clear, as should the channels for reporting within and across departments.

Unlike digitalised services that do not require organisations to have a specific department to go for substantial change in the process, packaged and enterprise services require reengineering of the process. Nevertheless, the scope of Business Process Reengineering (BPR) for packaged services is limited to a manageable level of risk; while for the whole enterprise, BPR is more radical and crosses departments, which could lead SMEs to encounter significant risks with regard to continuity. Thus, the BPR is an enterprise system that is arguably more substantial and more demanding on resources and effort than packaged services.

Consequently, there is no need for service provider involvement in digitalised services as the services are flexible, while packaged applications require service provider involvement to support integration with other services and other departments. In the case of enterprise services, as virtually all the changes will take place in the organisation not the application, there is a dedicated delivery team required to help restructure business processes and ensure the realisation of benefits from the transformation.

7.2.4 Benefits

All of the cloud services deliver cloud related benefits. These include accessibility, scalability, remote access, secured storage, virtually unlimited storage, cheap running and maintenance costs, and working from home during the pandemic. However, each group of services has its own unique benefits. Individualised digitalisation services will improve collaboration and communication for the same team, while Enterprise Cloud Services (ECS) will deliver SME benefits in terms of growth, faster decision making, and fewer mistakes being made within the organisation. Packaged services are somewhere in the middle in terms of departmental benefits and the organisational benefits. Depending on the type of package selected, certain benefits can be defined. Nevertheless, these deliver the same borderline benefits in terms of efficiency, planning, controlling and monitoring benefits. Different BCSs characteristics are summarised below, as shown in Table 7-1.

Table 7-1: Business Cloud Services (BCSs) comparison

	Digitalisation Cloud Services	Packaged Business Cloud Services	Enterprise Cloud Services
Aim	It is to digitalise all hand-written documents and communications within and across organisations	It structures the data collection, processing and outputs dominated by a single function (e.g. Accounting or HR) using third party knowledge and experience	It structures and integrates the data collection, processing and outputs from different functional departments using third party knowledge and experience
Examples	Word, Excel, PowerPoint, PDF, OneDrive, Dropbox	CRM, Accounting Systems (e.g. Xerox, Free Agent, Sage accounting)	ERP and IoT systems e.g. (SAP Cloud, Odoo, Sage Enterprise)
Purpose of adopting	1. Organisations wants to migrate their basic applications to cloud Mainly is to digitalise the manual and written documents 2. Enable electronic communication of the unstructured data and files across departments and to retrieve these documents wherever access to internet is possible	1. Organisations want to migrate the business applications to cloud 2. Designed to perform certain standard tasks using best in practice of the industry with affordable price and maintenance cost.	Organisations want to migrate bespoke applications to cloud
Best-in-practice	No best-in-practices	Best-in-practice by third party on a certain function	Best-in-practice by third party on the whole business model
Users' role	To establish their templates to collect and disseminate information. Users' knowledge to establish excel sheets for aggregating and calculating values	Use the service in day-to-day routine and use report to take informed decision Manually migrate the data from service to service to ensure the compatibility of the information and process	Fully automated and integrative; users' do not need to migrate the data through the applications.
Integration	Services do not talk to each other's in its standard format; experts are required for this and not accessible for SMEs	No integrations across services	Integration is existed
Flexibility	Highly data flexibility	Low data flexibility	Very low data flexibility
Configuration	Highly configurable and must be configured	Configurable but it is not obligatory to configure (based on business need)	
Customisability	Customisable	Customisable but too expensive to be affordable by SMEs	Practically not Customisable
Cost	Affordable to small enterprise ($4 per user per month)	Expensive to small enterprise ($10 -20 per user/month)	Too expensive to small enterprise ($+100 per user per month)
Organisation size	Employees 1 – 10	Employees 11 to 40	Employees 41 to up
Deployment Time	The same day - no need for process re-engineering	From week to 4 weeks for having minimum process re-engineering per department	It could take six months to do business process re-engineering across departments
Organisation Characteristics	1. Unstructured job description, work rotations, one person with many functions 2. Unstructured digital platform 3. Version control 4. Affordable (Cheap to deploy)	1. Tasks are repetitive per functions; functions are well structured and clear to enable data flow within the department. 2.Communication across departments is limited and not cost-effective to be fully automated and integrated 3. Business Functional focused 4. Analytic ability	1. Tasks are repetitive, standardised and routinised in the whole organisation 2. To ensure control over innovation and ensure standardisation versus flexibility 3. Full integration and automation function can limit the staff freedom to avoid corruptions and avoid abuse of the organisation resources 4. Expensive to implement.
Complementary resources help with requirements	1.Acquisition capacity 2.Human resources Learning	1.Assimilation capacity 2.Exploitation capacity 3.Human resource learning 4.IT infrastructure	1.Human resources Learning 2.Recruitment capabilities 3.Financial capabilities 4.Transformative capacity 5.IT Business alignment capability
Business value	• Efficiency • Flexibility • Working from home	• Business Effectiveness (achieving Maximum productivity) • Speed Effectiveness	• Decision making performance • Efficiency • Effectiveness Growth

7.3 BCSs Readiness Assessment Tool Development

The final model is used to develop an assessment tool for assisting organisations to identify strengths and weaknesses when delivering on the benefits arising from the investment in the BCSs. Tool items are borrowed from empirically validated questionnaires, which are examined in the previous Chapters 4, 5 and 6. The tool in (Appendix C) includes two filter questions. The first filter question seeks to determine which cloud technologies are available to the company, and the questions are then routed based on the answers received. The questions are organised from the top down; i.e. the filter questions start with the Enterprise Cloud services (ECS) questions, and if there are none of these, then the Packaged Business Cloud services (PBCS) questions pop up. If the organisation does not report having any, the following questions will be on Digitalised Cloud Services (DCS). Thus, the questions are filtered to align with the services available at each firm. The tool was sent in the form of a questionnaire to IT managers, heads of departments (i.e. superuser), and the CEO to clarify the level of capabilities in the organisation and the perceptions towards requirements for implementing each of the BCSs groups. The second filter question obtained the respondent's position. For the success and BPR questions, all roles should be answered because different stakeholders may perceive success and BPR differently, and all were involved in the BPR and can perceive the current level of success. The IT department is excluded from the organisational capabilities and requirements and questions about individual requirements because they may be isolated from the day-to-day organisation and individual routines and challenges. Functional capability questions are allocated based on function (i.e. finance, IT, and HR). If one or more of them does not exist, then the SME will answer these questions.

The first block of questions, which will be answered by all the participants, assesses the perceived benefits from BCSs and is administered to all BCSs groups. To understand the in-depth success of this type of application, success is measured according to seven items: ease of use, usefulness, whether the majority of employees use it and are satisfied with it, if it is used most of the time, if it achieved the expected ROI, and if the organisation views it as an asset. Then the second block refers to the assessment of capabilities, DCS will be asked about the organisational capacity to determine the service aligned with individual

needs with no requirement for IT capabilities. PBCS will discuss how employees are adopting new practices to effectively integrate new applications into Business As Usual (BAU). In addition, it is not only the ability to accept and integrate the application in practice that is important, but also the capacity to ensure the organisation is able to capture and seek out new opportunities whenever possible. By contrast, ECS is highly structured, requiring the organisation to be aligned to it, and so the organisation requires the capacity in the form of a daily routine to transform itself to fit with the templates defined in reference to the enterprise services, as shown in Figure 7-2.

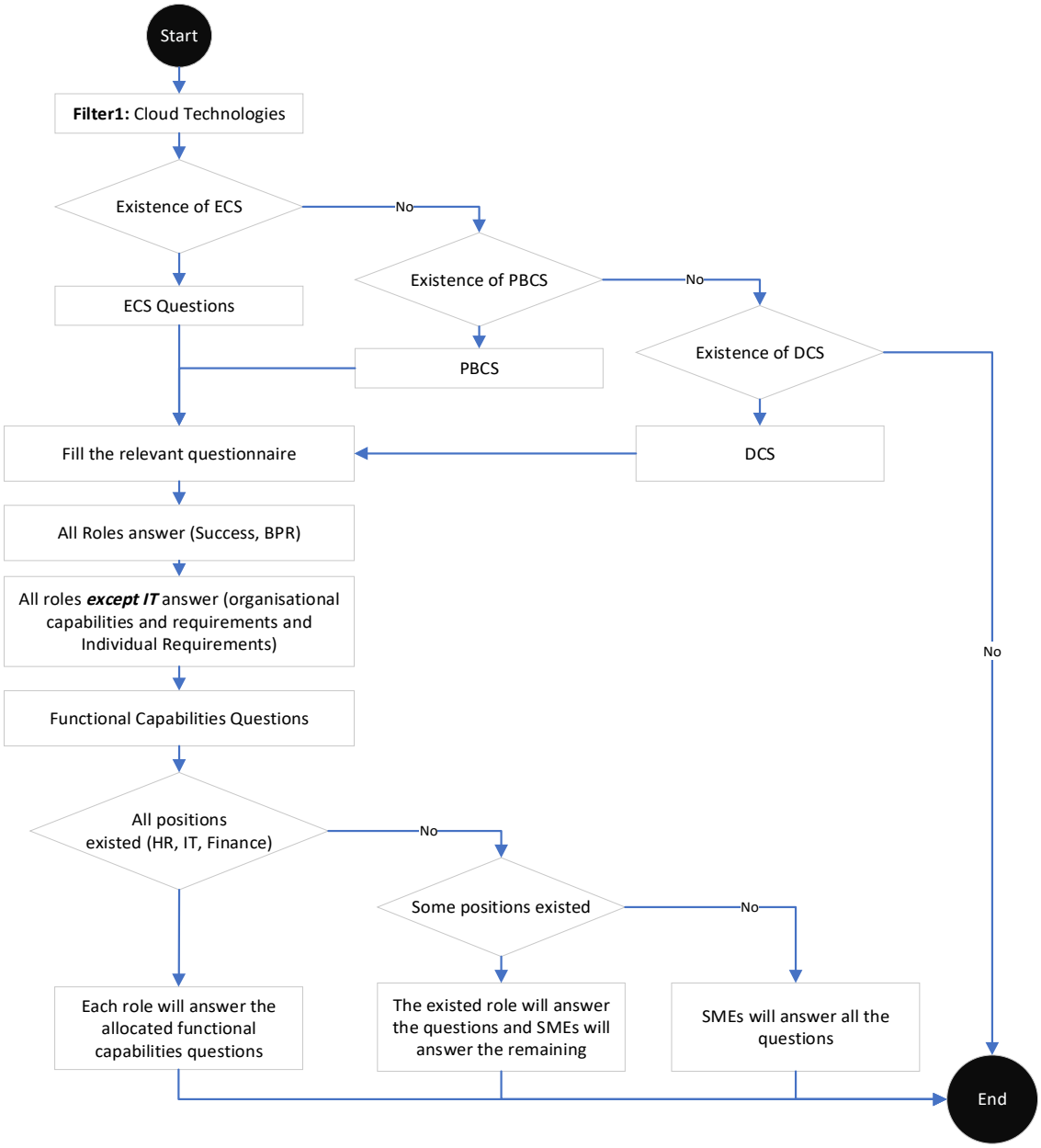

Figure 7-2: Assessment Flow Diagram

Next, in reference to HR capabilities, all BCSs groups are asked about their ability to identify knowledge, skills, and ability (KSAs) gaps, so that they can train and educate employees about them. Meanwhile, ECS will also be asked about the HR department's ability to redefine job descriptions and specifications to ensure they hire the right people to alleviate the transformative and organisational efforts that can arise during the implementation of ECS. The next issue is IT capability. The PBCS group are asked IT infrastructure questions, because PBCS applications are in silos and not integrated by default, which requires IT to establish the required environment for such integration, while ECS will be questioned about the alignment with business, to counsel business users to adapt to fit the relatively rigid service needs.

The next consideration is finance capacity due to the nature of SMEs. Only ECS services will be asked about their financial ability to secure funds and the ability to write an appropriate business case and financial planning with regard to ROI, and how to realise these benefits. Moreover, ECS firms will be assessed on measuring the ROI for new IT investments. Finally, because of the nature of the BCSs group, a set of requirements will be prepared relating to different practices. Since DCS is based on individual or team functions, questions are primarily about individual skills, practices, and communications as a way to customise unstructured data flow in digitalised services. With regards to packaged services, the firm will be assessing the organisation's clarity, accountabilities, responsibilities and reporting channels within and across departments. For the enterprise services, users' will be questioned chiefly about the overall organisation strategy, vision, policies and values to fit with values, vision and the policies required for successful adoption. DCS does not require the organisation or department to go through a considerable change as part of the process. Thus, BPR questions will only be shown to PBCS and ECS groups as it was proved and tested in Chapters 5 and 6, respectively, that they require reengineering of the process. Next, service provider questions will only be presented to PBCS to support integration with other services and other departments, which require the presence of a service provider. Meanwhile, in the case of ECS, practically all the change will take place in the organisation and not in the application, and so there is a dedicated delivery team required to help restructure business processes. Thus ECS will need to respond to the delivery team's resource related questions.

Table 7-2: BCSs Readiness Assessment Tool (Items and Administration)

How do you assess the cloud Applications used within your organisation, in terms of?	Display	Administered
Easy to use	All groups	All roles
Usefulness		
Most of employees are using it		
Most of employees are satisfied with it		
It gets the expected ROI		
My organisation sees it as an asset		
What are organisational changes required for the adoption of these services?		
Employees' practices	All groups	SMEs/users, Finance and HR
Employees' skills		
The reporting among/across departments		
Organisational policies and rules (simple and understandable by everybody)	PBCS & ECS	
The clarity of the roles, responsibilities and accountabilities		
The organisation structure (Easy and understandable, flat versus tall)	ECS	
The resource allocation in the organisation		
Business Process Re-engineering (BPR): is the level of change required in the current business process to use the application appropriately. In the adoption time, the magnificent of the …….. was (1 not magnificent – 7 high magnificent)		
Business Process Re-engineering efforts	PBCS & ECS	SMEs and IT
The significance of the BPR disruptions of the current operations		
Time required to complete BPR successfully		
What do you think of the level of customisation required for your implementation in terms of?		
Level of configuration of the system (i.e. changing the fields in the interface)	DCS	SME
Number of customised reports		
Number of customised interfaces		
In your organisation, HR Department:		
is able to deliver the appropriate training courses to us	All groups	HR
is effective in delivering the required training courses		
Knows our training needs effectively		
Considers IT literacy in the recruitment process	ECS	
Considers the weakness in IT is not acceptable for selecting new job candidate		
In your organisation,		
The search for relevant information concerning our industry is every-day business in our company	All groups	SMEs
Our management motivates the employees to use information sources within our industry		
Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available	PBCS & ECS	
In our company ideas and concepts are communicated cross-departmental		
Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements		
Our management supports the development of prototypes		
Our company regularly reconsiders technologies and adapts them accordant to new knowledge		
Our employees successfully link existing knowledge with new insights	ECS	
Our employees are able to apply new knowledge in their practical work		
In your Organisation, IT Department is:		
Our information systems are scalable	PBCS	IT
Our information systems are compatible		
IT plans reflect the business plan goals	ECS	
IT plans support the business strategies		
IT plans recognize external business environment forces		
Consistency of IT policies throughout in our firm is better than that in other firms in our industry		
What is the level of people resources required for the implementation?		
Diversity and availability of skills required to deliver it	ECS	SME and IT
Cost of the skilled consultants to deliver it		
How do you perceive the relationship with your service providers?		
Quality	PBCS	IT
Reliability		

Responsiveness		
Closeness to the workplace		
Language of the service provider		
In your organisation, Finance Department is able to:		
Measures the ROI for new IT investments	ECS	Finance
Develops business cases for new IT initiatives		
Secures the government funds for supporting company operations (e.g. Kafalah)		
Searches the government funds for supporting company operations		
How smooth is the applications' integration is in your company?		
Integrating with different clients and vendors	ECS	IT
Integration with other applications in the organisation		

7.4 Case Study Validation

Cases were selected based on voluntary responses to a call on LinkedIn (due to Coronavirus lockdown restrictions), and three companies were selected. All three were analysed and reported upon to ensure rigorous, in-depth findings. The aim was not to discover new things or create new theories; rather, it was to apply the tool and proposed strategies to remedy weaknesses through the application of a BCSs framework. Thus, selecting comparable cases was not the chief intention. However, all cases are in the management Services area, and the diversity of the cases enriches and increases the feasibility of generalising the results to different contexts. In each of the case studies, organisational context and background were identified and explored based on secondary data and interviews with senior employees of the companies.

The research benchmarks the level of capabilities of other organisations in the database collected during the framework examination phase in (Section 3.4.3). A report is then presented to lay out the participating case study organisation’s strengths and weaknesses in terms of capabilities and the requirements associated with different BCSs. While the research database is limited, the comparison provide useful discussion points to inspire improvement actions. A workshop was undertaken with key stakeholders (i.e. CEO, IT, and managers) to gather their feedback on the assessment tool. All cases are structured as follows. First, detailing the background to the case study context; second is case motivations to examine the BCS and to define success. The third is the technical definition of the technological resources of the BCS. The fourth and fifth involve benchmarking their current requirements and capabilities along with the data set collected from the questionnaire. The last section concerns the workshop (Appendix D) representing the

findings in terms of report and spider diagrams to explain strengths and weaknesses, then getting their feedback as evidence and the validity of the tool, as illustrated in Figure 7-3.

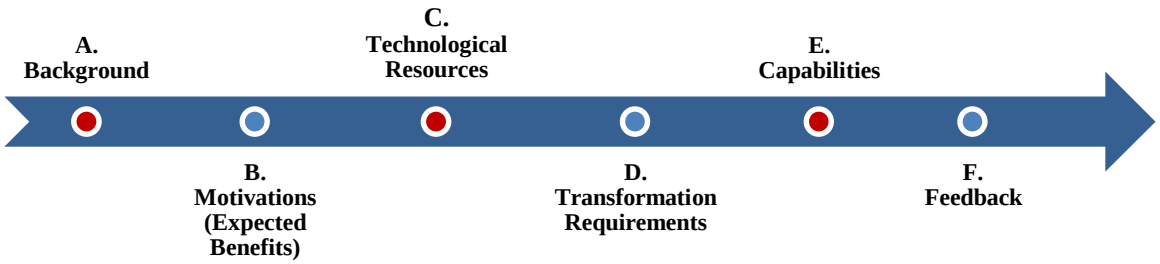

Figure 7-3: Case Studies Structure

7.4.1 Case Study 1

The first case study is a Saudi SME company that adopted DCS in the last three years. The current success, capabilities, and requirements (efforts spent and required) are analysed and benchmarked with the data set from the questionnaire. The organisation does not have an IT manager, Finance manager or HR manager. The accountancy services are outsourced. All questions concerning functional capabilities were asked to the owner.

A. Background

Company N is a Saudi agency established in March 2016 that gathers evolved Saudi experiences in content making and marketing communications in conjunction with the finest professionals in the Middle East. The company is based in Riyadh, has eleven employees, and has less than 100 thousand USD in annual turnover. Their solution, content and marketing materials are diversified and based on deep insights and understanding of the market and clients' needs.

Company N helps its partners compete successfully, developing marketing and advertising strategies through excellence in producing creative content and helping to achieve proliferation through the multiple services available at all media outlets. Their goal is as documented on their website:

> *"Our goal remains to be the most trusted and admired company in the area of marketing communication services and content production for all success partners." CEO*

B. Motivations to go for DCS

The case was highly motivated in terms of delivering DCS, as they used to receive both offline software applications and manual documents. These manual documents created issues for the companies in terms of the quality with which they documented communications with customers (i.e. manual register of requests, and manual indexing of the files) in terms of having hand-writing mistakes, copying mistakes from file to file, and the development of efficiency issues (e.g. time and cost of re-writing information in different files). Similar results were found in (Section 4.3.4.2. page 54) Thus, the CEO decided in 2019 to shift towards the cloud computing services offered by OneDrive. These are successful in delivering their objectives. Currently, the level of success associated with this case is similar to the case study, with no significant differences in the sample data ($P > 0.1, \bar{X}_C - \bar{X}_S = .03$) ($\bar{X}_S$ is the sample average where $\bar{X}_C$ is the case average score of respondents). The success score is 4.38, which is significantly higher than the middle point of the scale (4). However, there is scope for improvement to reach the score of 7 (the upper limit of the scale), as shown in Figure 7-4. The following analysis will define the better elements and areas for improvement to boost the success score to a higher grade of 5 or 6.

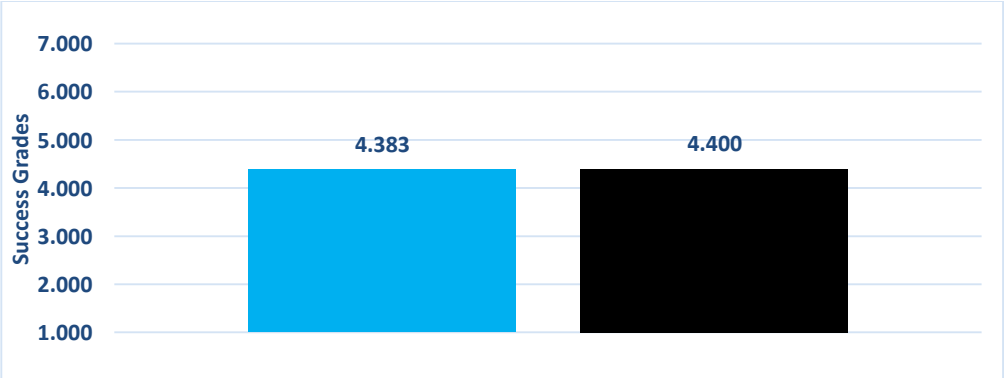

Figure 7-4: Assessing Success Factor (Case 1)

C. Technological Resources

This case does not differ significantly from the others in the interview and questionnaire analysis. These are the main reasons for selecting the OneDrive package: their employees are familiar with MS office applications, which are the cheapest in the market, and easy to deploy and install: there is no need for IT and the possible scalability with other MS

applications: seamless synchronisation among users. These motivations matched the research findings in section (4.3.1, P43), that DCS applications are able to deliver such benefits.

> *"I didn't hesitate to choose OneDrive as it was compatible with our outlook emails, professional and installation was instant" CEO continues*

> *"Our employees are familiar with these MS office applications and thus they adapt to the system without any disruption in the workplace." CEO*

Following the implementation, especially considering the context of the Covid pandemic, the CEO highlighted benefits similar to others in the interviews previously identified (Section 4.3.4.2.3, P56), as they afforded employees accessibility and flexibility to work from home and sustain business operations during the lockdown period.

The CEO was aware of and confirmed the benefits of access to online storage services, and also the value of being able to access unstructured data to improve business flexibility and agility.

> *"A remote storage server that allows access to files from remote devices" CEO*

> *"A secure place that files can be saved and accessed easily by myself, teams and clients" CEO*

The organisation's current situation in terms of overall success has recently passed the benchmark level. However, there is a notable issue that can enhance the level of success. Indeed, interestingly, the CEO did not know that the "tracking changes" option were available to him, and his company did not know about this feature. Thus, this example will encourage him to examine why they did not know about these technological resources and the potential of missing out on potentially valuable benefits because of the lack of embedment of these resources into business operations.

D. Transformations Requirements

According to the assessment, the company made slightly less effort than the benchmark average in terms of fitting the business to the cloud, although it provided employees with training on the use of cloud applications. The organisational effort score was 3.94, which

is slightly below the benchmark of 4.15. Individual efforts are lower than the benchmark score ($\bar{X}_C - \bar{X}_S = .754, P < 0.01$) and also slightly below the middle point of 4. As shown in Figure 7-5. These figures are not significantly below the middle point of 4; however, the significant effort would be required to attain grades 5, 6 and 7.

The current scores indicate that they are doing better than the benchmark, but that there is space for improvement. The positive points noted were that the majority of the manual templates are now in Excel and Word files, although there is no analysis of the data contained. This does make it possible to send templates more readily to the clients to complete and return by email, but they do not offer a shareable link for the customers and suppliers so that they can access their files because they do not know about the track and control changes. Thus, the process of verification of the received files is a manual one. The opportunities for improvement reported to the SME included the need for more training and staff involvement on "control changes", the use of Excel analytic skills, and improving the use of Excel as a means of communication across departments.

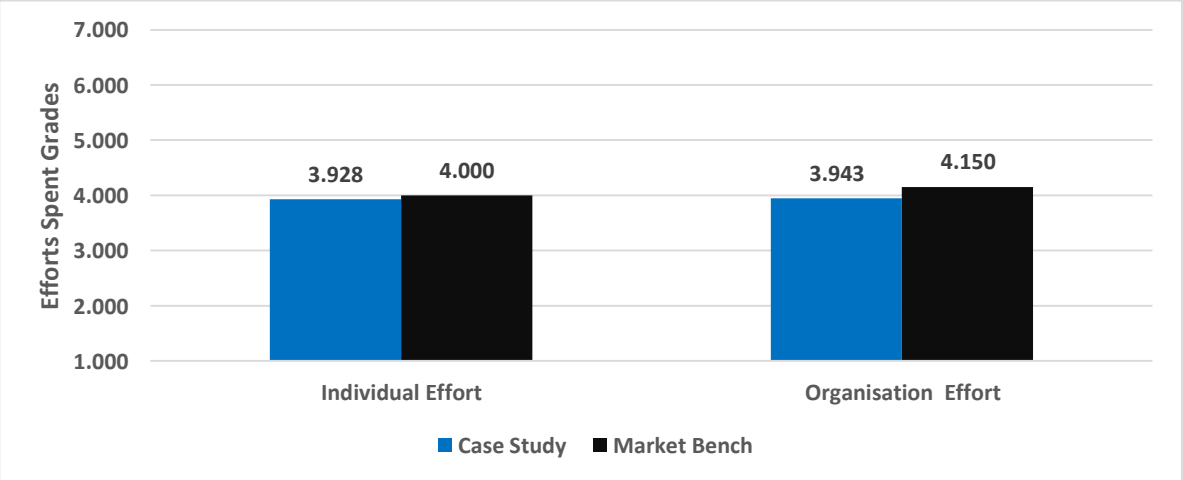

Figure 7-5: Transformation Requirements Chart (Case 1)

E. Capabilities

As noted earlier, the case study organisation is failing to take advantage of a significant technological resource at this level, i.e. tracking technology. After reviewing the completed questionnaires, it emerged that this organisation faces a significant challenge in terms of their ability to acquire new knowledge when comparing the benchmark data and the middle point (Score = 3.9; slightly lower than the benchmark data of 4.37 and the

middle point of 4), and the capacity to learn about new things and acquire new knowledge (Score = 3.7; lower than the benchmark data of 4.0 and the middle point of 4) as shown in Figure 7-6. Thus, the sources of knowledge for employees to learn about the "new" features of "cloud" applications is limited, i.e. in the offline MS office, there was no requirement for tracking changes because the files were saved on the computer and no access was provided to others, and there was no need to track the changes. Thus, when the organisation moved to be cloud to develop a vital feature (i.e. sharing the customer/employee/supplier folders), they did not do so because they were not able to track possible changes made by the other party (i.e. customer, employee, or supplier). Therefore, the use of the cloud was limited to sending files by email and using manual work to verify the changes and manual comparisons between the sent files and the received ones. This was undoubtedly a surprise to the CEO when I explained this issue to him in reference to the results of the assessment tool.

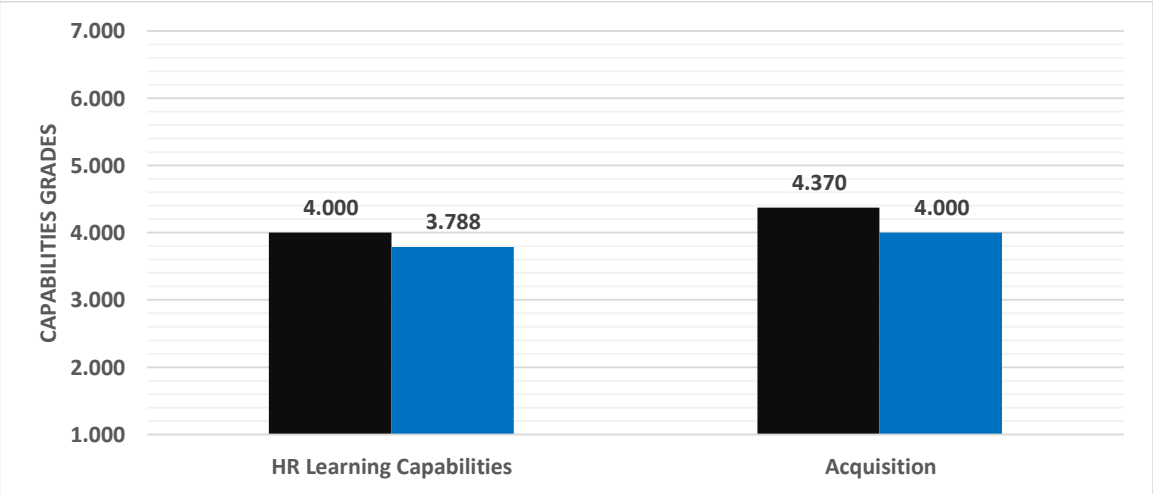

Figure 7-6: Capabilities Chart (Case 1)

F. Feedback

A report was submitted to the Company, and then a discussion meeting was conducted to gather feedback, which demonstrated that they were satisfied with the results generated by the tool. The feedback was based on the scores received compared with the benchmark tool, the advice session to discuss the results, and the tool's usability and ease of use. The diagram below was presented to the attendees to show them that they are doing better than the benchmark data predicted in terms of their efforts to assimilate the DCS, although the organisational and functional capabilities are a little behind the benchmark. Moreover,

all the data points are below the middle point of 4, which indicates there is significant scope for improvement, as illustrated in Figure 7-7.

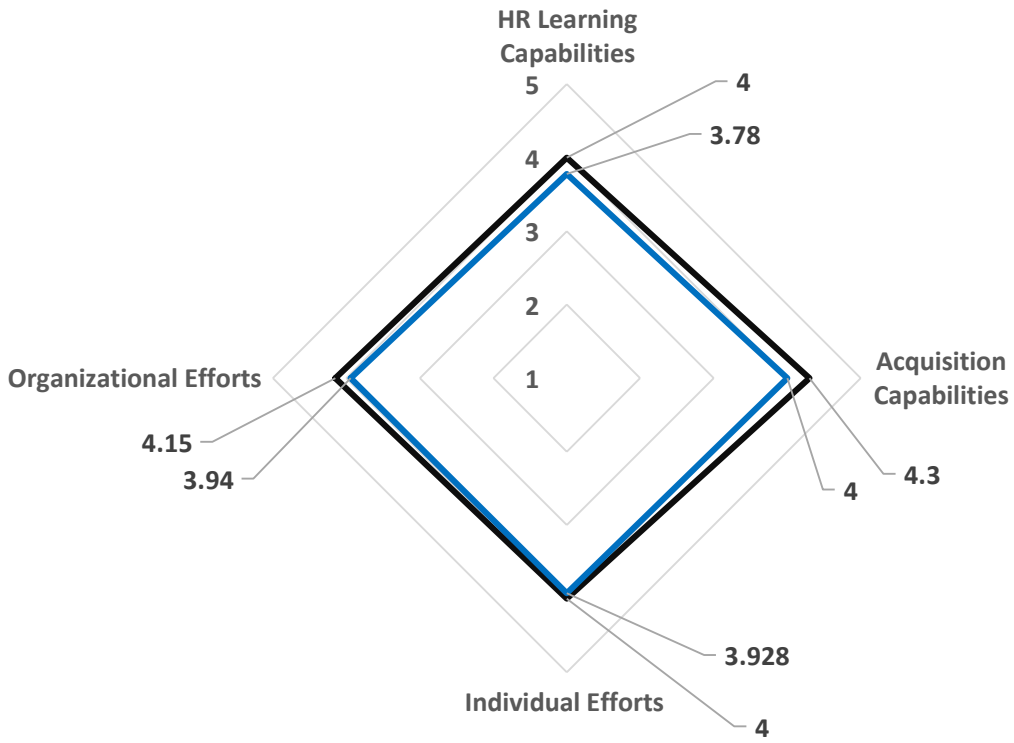

Figure 7-7: Capabilities and Efforts Assessment (Case 1)

The feedback comes positive on all aspects

> *The assessment is useful, the feedback meeting was spot on as we identified our weaknesses, and we will implement some strategies in establishing HR team. CEO*
>
> *The tool is easy to use, and each section is clear. "Yes, I agree with you. It is a new idea to have a "cloud levels". I see it as very critical for realizing cloud success" CEO*
>
> *"The checklist of questions is very good. They can easily be applied to evaluate performance which is the key consideration here" CEO*
>
> *"This is good. The structure of the road map can show what has to be done, once these are addressed, I truly think other firms can move forward." CEO*

7.4.2 Case Study 2

The second case study organisation is an SME that has adopted PBCS in the last three years. The company's current success and capabilities, and implementation efforts were assessed and benchmarked against the data set from the questionnaire, and then presented in a workshop. This organisation is bigger than the previous one, and has well-established IT, Finance and HR departments. Thus, the functional questions were answered by the heads of these departments.

A. Background

Established in 2015, Company E is an HR consulting firm that aims to enhance organisational effectiveness and support sustainable, profitable growth. It has between 10 and 50 employees and generates a turnover of 100,000 to 1 million USD in the management services industry. Its primary services are founding and organising, organisational structure, policies and procedures, reviewing management practices, job needs analysis, screening, filtering and evaluation, qualification of new employees, leadership development programmes, career development programmes, programmes to prepare job seekers, undertaking and operating, management of salaries and benefits, personnel affairs department, and providing self-service to employees.

B. Motivations to go for PBCS

Company E overcame deliver these services by adopting task management accounting software. Before deploying the app, their work was extremely disorganised, in that reports took time to generate, tracking progress and deadlines was difficult, sharing projects with others was challenging, and directors were reluctant to change and proceed towards adopting the new application. Company E had deployed/implemented task management software many years previously at an affordable price and maintenance cost to perform certain business tasks based on industry best practices. This case demonstrates the successful adoption of the software as the self-rated score is 4.9, which is significantly more than the middle point of the scale of 4, but slightly below the benchmark indicator of 5.3.

The proposed justification for this score, which is higher than the middle point and lower than the benchmark average, is the newness to successfully embracing the technology.

The positive side of PBCS has recently emerged after appointing a new accounting manager with extensive experience in various business packaged applications. As a consequence, numerous ways of working have been adapted to fit with the application. Since appointing a new accounting manager, the accounting application is now responsible for the stream of data reported in the organisation, enabling them to provide effective services to customers by sending and tracking invoices and payments accurately.

> *It is successful and indeed does the job as it let us make sure tracking invoices and receive payment are well managed. It is our central software, and we consider it the main asset for us. (Accountant).*

The current situation at the organisation in terms of overall success factors is 4.76, which falls below the benchmark level of 5.13. as shown in Figure 7-8. There are several notable issues highlighting their current success. The following section identifies these by conducting an analysis.

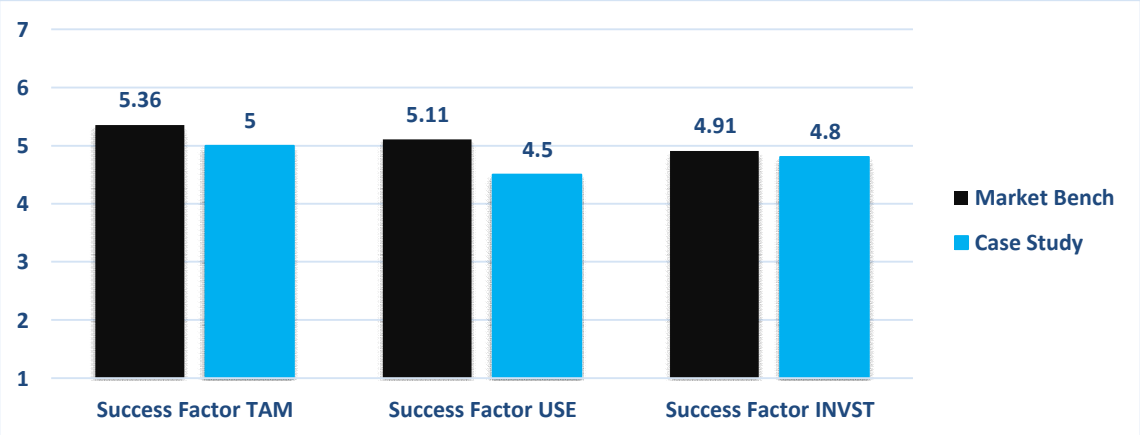

Figure 7-8: Assessing Success Factor (Case 2)

C. Technological Resources

The company has implemented an accounting task management system. This is used to manage the accounting firm's "back-office." Supporting the evidence proposed in Page 82, which they used when creating, collaborating, and monitoring work, as well as managing clients and administrative tasks such as proposals, payments, and reports.

> *It's an accounting system that we have used for a few years now and we are quite glad that we have implemented it. It tracks our services and allows us to make all arrears billing.*

Additionally, these PBCS were used for planning, organising, and prioritising several work tasks, and are scalable. Currently, the majority of the manual scheduling is now undertaken on a task management system, and business accountants' jobs are delivered on time and tracked. These accounting cloud services were perceived by the owner as commercially available and retain the company's data on the cloud while performing a specific business function as an asset to the organisation.

> *The software enables us to store all the work safely in one place that can be accessed from any device in any location. With no need to download any software, we start organizing our work as soon as we signed up.*

D. Transformation Requirements

In the assessment, the company made more efforts than the benchmark to fit the business to the cloud application, especially around BPR work ($\bar{X}_C - \bar{X}_S = .31, P < 0.01$). It achieved this by changing the way businesses work to fit with the application and ensuring all stakeholders are involved in the change. However, the organisational ($\bar{X}_C - \bar{X}_S = -.2, P > 0.1$) efforts fall behind the benchmark. The organisation's efforts in terms of training employees and communicating through business efforts and rules are simple. However, the case study firm is struggling with organisational policies to align the new accounting services with the organisation's entire business model; thus, the accountabilities and responsibilities are considered a little strange by staff members. More effort is required from the organisation, either to align its business model to the requirements of the system, or to integrate the accounting system into the business model.

Due to the reliability of the selected service provider free of error, the closeness to the company assured the directors that the language of the service provider was 'Arabic' as a way to avoid mistakes, especially with regard to financial transactions. However, the score is lower than the benchmark level ($\bar{X}_C - \bar{X}_S = -.2, P < 0.05$). As shown in Figure 7-9. This is because the service provider was not helpful prior to the new accounting manager's arrival and did not offer the required support. They continue to struggle in terms of support as they do not represent the professionalism and responsiveness expected by the owner.

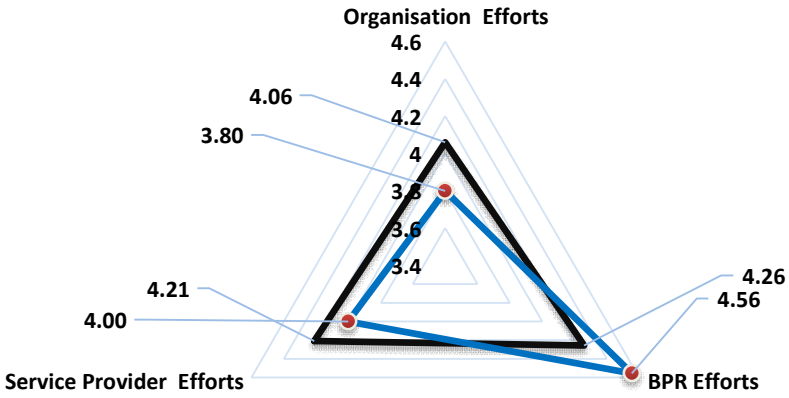

Figure 7-9: Transformation Requirement Radar (Case 2)

E. Capabilities

The exploitation capabilities ($\bar{X}_C - \bar{X}_S = .89, P < 0.01$) and assimilation capabilities ($\bar{X}_C - \bar{X}_S = -.29, P < 0.01$) are lower than the benchmark, as in Figure 7-10. As has been noted in this case, as a reflection of weaknesses in assimilation capabilities, the company's ideas and concepts suffered from poor communication across departments, and information flow was found to be slow. Management is also expected to demand periodical cross-departmental meetings to ensure an interchange of new developments, problems, and achievements. In addition, exploitation is the weakest factor in the organisation as management is expected to support the development of prototypes and reconsider technologies as a way to adapt them according to new knowledge. This demonstrates why the advantages of the cloud system are not fully utilised. The IT infrastructure, in terms of its scalability and compatibility, falls below the level of others in the benchmark, as is the company's ability to integrate new knowledge and teach employees the new skills required to manage it. Therefore, the use of the cloud was limited due to a lack of understanding of the power of controlling and planning to forecast the market and get the best out of the software. This was undeniably a critical point for the CEO when the workshop detailed the issue to him based on the results of the assessment tool.

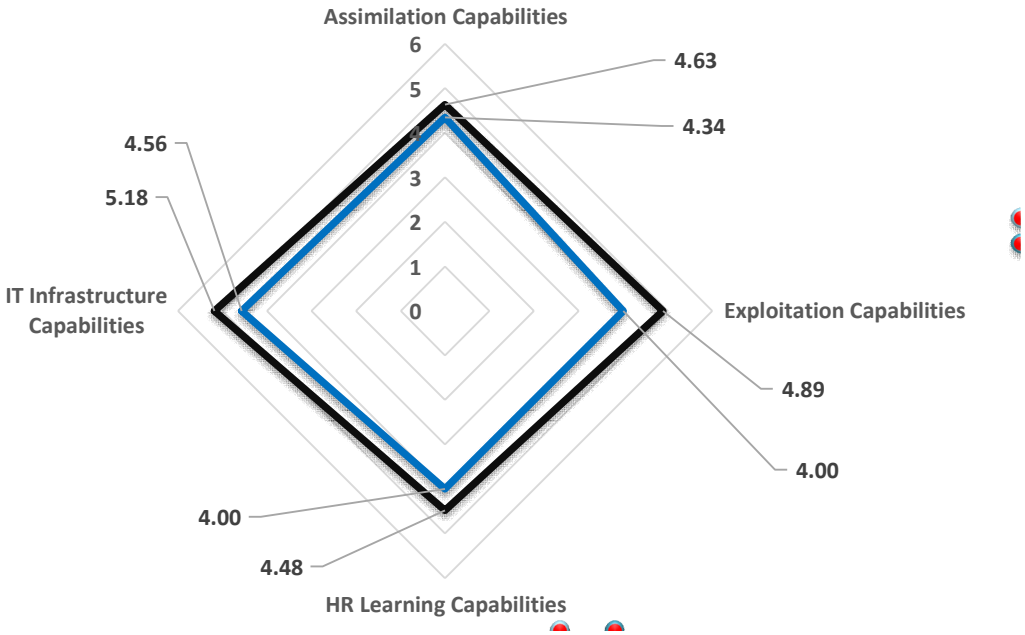

Figure 7-10: Capabilities Assessment Radar (Case 2)

F. Feedback

A report was submitted to the company and a discussion was held to obtain feedback, which showed satisfaction with the results generated by the tool. Feedback was requested on the scores obtained in comparison with the benchmark, as was an advice session to discuss the results as illustrated in Figure 7-11, and the usability and ease of use of the tool. As the following quotations demonstrate, the feedback was positive with regard to all aspects. The diagram below was presented to the attendees to show them they are doing better than the benchmark data in their efforts to assimilate the PBCS, but that the organisational and functional capabilities are a little behind the benchmark. In addition, all the data points fall below the middle point of 4, which indicates a significant space for improvement.

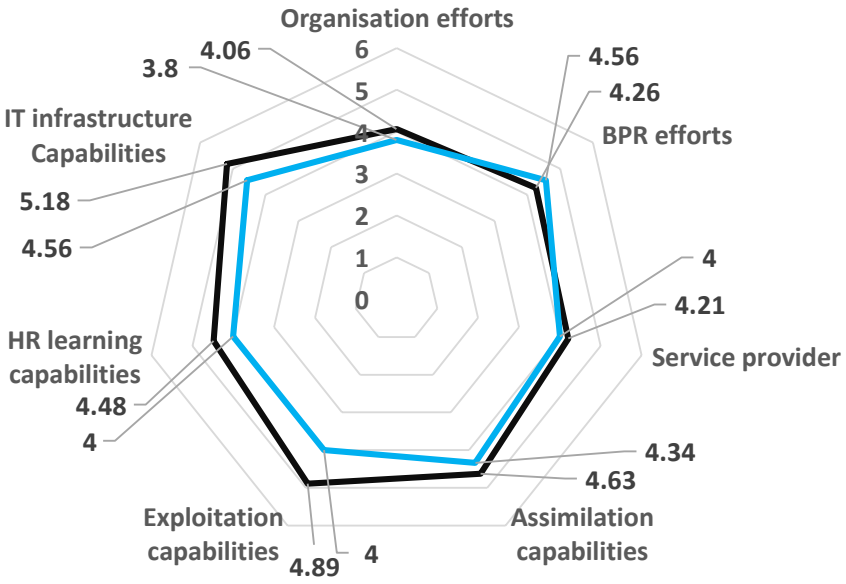

Figure 7-11: Capabilities and Requirements Assessment Radar (Case 2)

All noted feedback was encouraging

> *"Notably, I agree with the criteria because a lot of what is mentioned in the tool would define our cloud application" CEO*
>
> *"The tool does quite touch the core of our cloud application. It is helpful. They are easy to understand, and questions make sense." IT Manager*
>
> *"Those requirement and resources are not only relevant but a wide good list. Honestly, SMEs, firms need as such tool to understand the challenge to help to implement the cloud software. They will use the cloud when needed to upgrade without understanding the risks involved." Accountant*
>
> *"This tool is actually great assessment for firms to be able to find out how well they are aware of their IT infrastructure and gives clear indication of how cloud levels should be seen as." IT Manager*

7.4.3 Case Study 3

The third case study is an SME that adopted ECS in the last two years. The current success, capabilities, and implementation efforts are evaluated and benchmarked with the data set derived from the questionnaire and presented in a workshop. This organisation is larger than the other cases and has deep-rooted IT, Finance and HR departments. Thus, the functional questions were answered by the heads of these departments.

A. Background

Company D was established in 2013, and is engaged in management consulting; that is, the practice of helping organisations to improve their performance. Organisations often draw upon the services of management consultants, to obtain external advice and access to their specialised expertise. They also help organisations to solve issues, create value, maximise growth, and improve business performance. They use their business skills to provide objective advice and expertise, and help an organisation develop any specialist skills it may be lacking. Currently, this organisation has 80 employees and a turnover between 10 to 13 million within the managerial consultancy services. This organisation is interested in innovation and leading the market and calls itself a market of innovation.

The board consists of the managing director, financial director, and IT director. The level under this prepares operational plans and takes operational decisions. It consists of the managers involved in purchasing, operations, human resources, and marketing.

B. Motivations to go for ECS

Company D implemented Oracle cloud-based ERP two years ago as a way to achieve their intended purpose. However, they feel they are not taking full advantage of ERP. In fact, they partially failed in the implementation phase twice due to cost overruns and limited resources. The owner noted that when they decided to move into cloud ERP, the organisation’s policies and practices remained the same as they were not fully aware of the amount of work required. One of the focuses of company D is to accurately predict demand and supply for the enterprise. This covers aspects of standard functionality, analysis, and professional demand planning. Future demand is forecasted by blending statistical analyses, business sense, and knowledge of events. The organisation's current situation, in terms of overall success factors, shows that it has NOT passed the benchmark level as the score is 4.3, which is significantly lower than the benchmark score of 5.3. as shown in Figure 7-12. Hence, there are issues within the firm, and it must be tackled to enhance their success. However, the score is still above the midpoint, indicating the company is experiencing some successes, but below the level of its peers in the benchmark.

Some of the noted benefits were especially relevant due to the COVID-19 pandemic. The CEO highlighted those benefits that are similar to the interviews previously identified in (P110) and gave employees the accessibility and flexibility to work from home and sustain their business operations during lock-down.

"ERP is an amazing software that can play the everything role". CEO

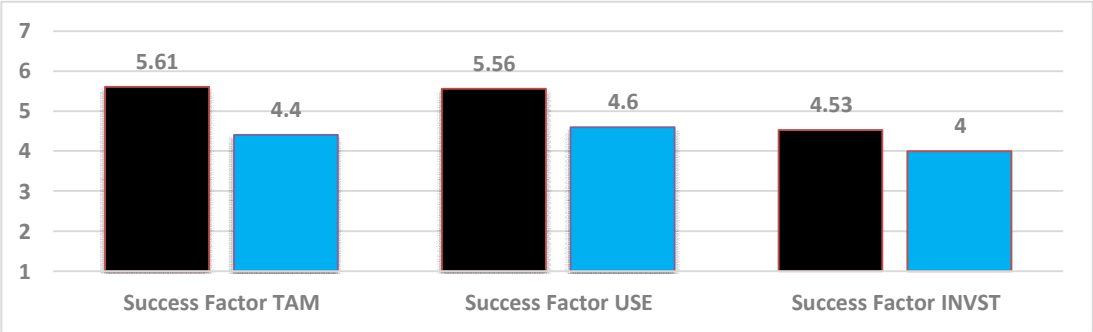

Figure 7-12: Assessing Success Factors (Case 3)

C. Technological Resources

Company D has benefited from the ECS as a tool to integrate businesses across the entire organisation. The enterprise system is an integration enabler, in which all company-wide information across departments is synchronised and automated to receive the full advantage set out in the business processes.

> *The Oracle ERP software integrates the essential financial and operational business functions. CEO.*
>
> *We had a lot of issues with the app was not giving us a quick access to reports, but we are looking now for other option in the market". CEO*

Clearly, the owner was not aware of the decision-making benefits and the "analytical power" option that was available. This feature could improve business processes performance by delivering insights into the performance of different processes, functions, and departments.

D. Transformation Requirements

The company's efforts and requirements before the implementation were lower than those of others in the benchmark. The BPR (3.9), organisational effort (3.8), integration effort (4.3), team delivery efforts (4.5) are all much lower than the respective benchmark levels, (4.72, 4.48, 4.61, and 4.61), respectively. The biggest gap is for BPR (.65) and

organisational efforts (.67), representing the lack of organisational commitment during the implementation stage. The IT and team delivery resources are very close to the benchmark, with differences of about 0.2 and 0.3. as illustrated in Figure 7-13

The recommendations offered to them related to the IT Manager ensuring the system's integration with many customers, providers, and third-party organisations, and secondly, resources, as it was difficult to locate the diversity of talents needed to support the system, as well as the cost and availability of competent consultants before and after the implementation.

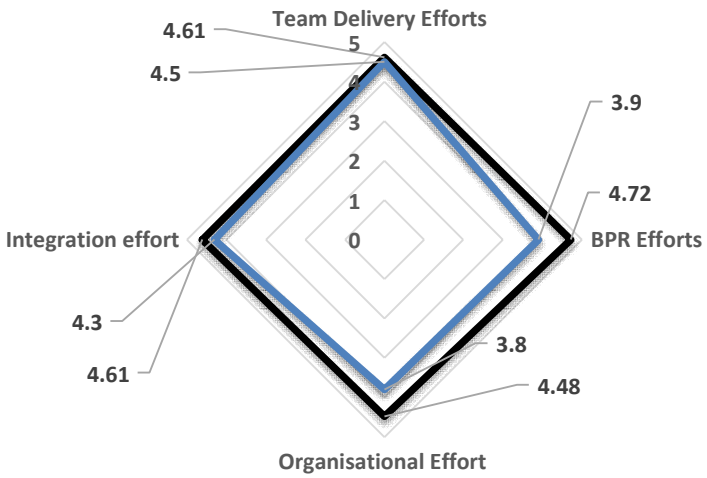

Figure 7-13: Transformation Requirements Radar (Case 3)

E. Capabilities

As noted earlier, this case omits a significant technological resource at this level, which has analytical power (faster decision making and more accurate reports). The main required capabilities, as defined in this research, are the organisational transformation capabilities and functional capabilities (i.e. HR, IT and finance). As shown in Figure 7-14, This case is underperforming in terms of all of these capabilities relative to the benchmark. The transformation capabilities are 3.72 compared to 5.13 for the benchmark and 4 as a middle point. This indicates the business' inability to change and transform to fit the changes in the environment, i.e. the reflexivity and flexibility of the enterprise is limited, which supports the indicators of BPR in terms of requirements. The business is

stagnating, allowing less space for changing or adapting to absorb and assimilate the ECS in general (reflected in automating business processes), and the knowledge created from the using of this system (no use of data analytics).

The second greatest weakness is in the area of HR functional capabilities in learning and recruitment. HR recruitment, indicating the organisation's ability to hire members of staff with an accepted level of skills on the technology, means that HR does not embed technology skills in the job description and specification, which led to recruiting staff members unable to deal with technology easily and swiftly. The challenge is exaggerated because the HR department does not have the capacity to identify the weaknesses in IT skills and provide adequate training compared to the market benchmark. Compared to the benchmark of 5.08, this business assigned a score of 4 for HR capabilities.

Associated finance capabilities have mixed performance. They have shortfalls with a score of 4.34 compared to the market benchmark of 5.26. However, the company has successfully been granted a fund from Kafalah to finance their ERP implementation, which was a huge step in their adoption of this service. They applied for a business case to the bank with the required documents, then received a Kafalah guarantee and written approval from the business owner accepting the Kafalah programme.

> *"When we got accepted and the credit-line agreement was signed by the bank and us we obtained the financial funds" CEO*

The smallest gap in effort relates to the IT department's capability to ensure alignment with business needs with a score of 4.67 compared to 4.84. Although finance and IT are below the benchmark index, they are the only indices delivering a score significantly higher than the midpoint of the scale. Thus, priorities for this case started with the transformation capabilities and then the HR functional capabilities.

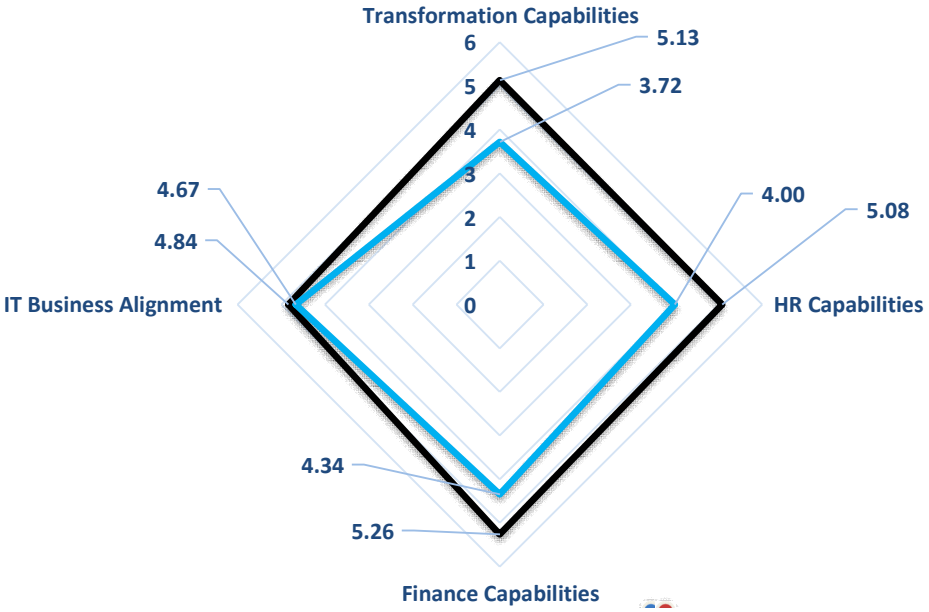

Figure 7-14: Assessing Capabilities Radar (Case 3)

F. Feedback

A workshop with the board of directors was held to discuss the research results and the last slide presented an overview of the current situation. The main issues highlighted were transformation capabilities, organisational efforts, BPR and the HR functional capabilities. These are the most serious considerations, for the business to start with. The IT and finance functional capabilities are satisfactory, as they are above the middle point, although there is scope for improvement, as seen in Figure 7-15.

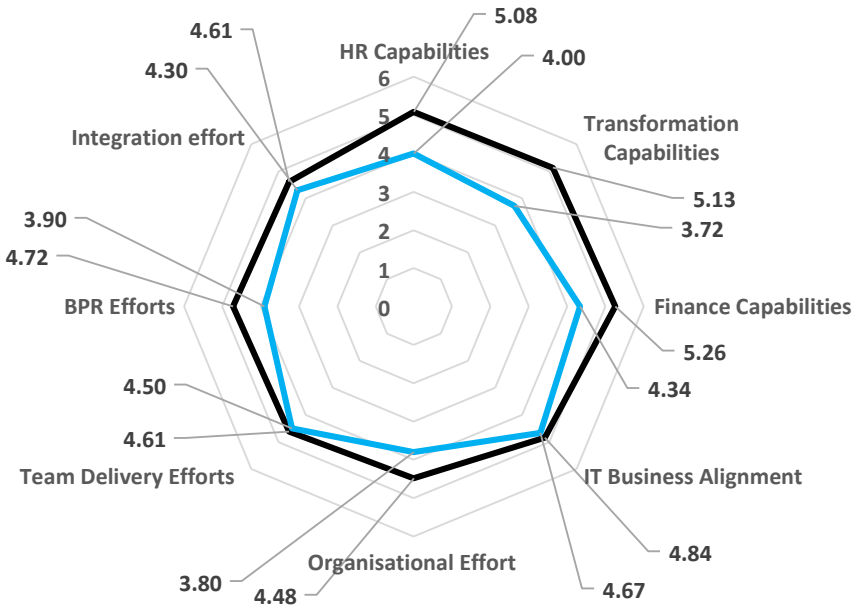

Figure 7-15: Capabilities and Requirements Radar (Case 3)

The feedback was noted and found to be positive for all aspects.

> *"Your tool is great due to various reasons. For instance, the resources and the requirement in the tool used, we wouldn't be at this stage without having them in place". CEO*
>
> *"The assessment is useful, comprehensive and covers most aspects needed when it comes to adopting cloud ERP". IT specialist*
>
> *"It is interesting as in the Saudi market, I couldn't find mature consultants offering such readiness measures" HR Manager*
>
> *"We are so committed to start applying the proposed suggestions and recommendation to get the full benefit of ERP" CEO*
>
> *"As I mentioned, I find your readiness assessment tool beneficial as there is a lot of sensitivity in the marketplace about cloud-based products." IT Specialist*

7.5 Summary

The aim of this chapter was to develop the BCSs framework and improve the readiness assessment tool. To achieve this, the literature was designed to deduce and extrapolate key definitions and aspects. The expert interviews were conducted for the purpose of validation, and the questionnaire was distributed to examine chief factors. Through employing a pragmatic research paradigm, this research effectively defined aspects of the technical resources, requirements, and organisational capabilities. Subsequently, three case studies were discussed and analysed. The next chapter will revisit the research question, aim, and objectives before focusing on the research contribution, professional implications, and other areas for improvement.

Chapter 8 : Discussion and Conclusion

8.1 Introduction

In this chapter, the discussion combines all the data analysis and results for the four studies in Chapters 4, 5, 6, and 7. The first section begins by revisiting the research question, aim and objectives (8.2). Then the contribution to knowledge is presented in Section 8.3; and professional ones are defined in Sections 8.4. The areas of possible improvement are highlighted and detailed in Section 8.5. Finally, new avenues of research unlocked by this research are set out in Section 8.6.

8.2 Revisit Research Question, Aim and Objectives

This section defines the research question and objectives. The research aims and questions are presented in the following section as well as included in reference to the objectives defined in the subsequent sections.

8.2.1 RQ: Why do SMEs realise different levels of success in the cloud environment?

The aim of this research was to develop a framework to define the requirements for transformation, and the organisational capabilities necessary for a successful implementation of different types of BCSs. This framework can be operationalised into a readiness matrix to assess and assist SMEs to achieve success with different types of cloud services. The researcher was able to define success from an individual and organisational perspective. The individual perspective concerns users' use and intention to use, and organisational perspectives the recognition of the benefits attainable because of integrating cloud services. This research grouped cloud services into Digitalised Cloud Services (DCS) (e.g. office applications and email), Packaged Business Cloud Services (PBCS) (CRM or Payroll system), and Enterprise Cloud Services (ECS) (e.g. ERP system). It revealed the main reason for the variable level of success experienced by each group is that it has different transformation requirements, IT resources, and organisational complementary resources (e.g. capabilities, financial resources, and other organisation resources).

8.2.2 RO1: To taxonomize Business Cloud Services (BCSs) in the SMEs environment

Cloud services are taxonomized into Digitalised Cloud services (DCS) (e.g. office applications and email), Packaged Business Cloud Services (PBCS), and Enterprise cloud services (ECS). DCS are intended for digitalising manual and written documents and communications within and outside the organisation. These include OneDrive, SharePoint, and Google Drive, which can host text, spreadsheet, and presentation services. They can provide a good opportunity to collect, store, and disseminate unstructured information. Due to its flexibility, users are required to be skilled at structuring data so that it is useful, aggregated, and found in an efficient and effective way. This service is suitable for small organisations (below 10 members), unstructured job descriptions, work rotations, one person with many functions dealing with unstructured data, flexibility, mobility, accessibility, and adaptive.

The second group of BCSs is PBCS. This group is used to capture and disseminate data in a structured way, using third-party best-in-practice tools (i.e. the service provider). These services are not customisable by default, or they are so expensive as to be customisable. Moreover, users can configure the fields of data input and associated reports to align with the use of the service to fit their needs. These services are sold separately without integration into other applications, and so the process of integrating them into other applications is not straightforward or affordable for SMEs. Examples of these applications are Customer Relationship Management (CRM), Warehousing Systems, and accounting systems. The users of these services also benefit from access to expertise. These services are accessible anytime and anywhere. In the case of services provided to bigger organisations (11 – 40) where tasks are repetitive, functions are well structured and clear (i.e. marketing department, payroll department, and accounting department), facilitating data flow within each department. The possibility of communication across departments may, however, be limited, and it is not always cost-effective to be fully automated and integrated, due to the enormous cost of the integrated system.

ECS are an integrative platform designed to host and synchronise different cloud services. These are similar to the PBCS in terms of structuring data inputs and outputs using third-

party best-in-practice tools, but they differ in that they integrate different services and functionalities in a synchronised way. Although expensive, the platform delivers the opportunity to standardise business processes as a way to improve efficiency. Examples here include the ERP cloud services and IoT platforms. These services fit more where organisations have more than 41 members, and where tasks are repetitive, standardised and routinised throughout the whole organisation. Therefore, the main point here is that it is vital to ensure control over innovation and ensure standardisation versus flexibility. Thus, enterprise systems with a full integration function can limit staff freedom to avoid corruption and abuse of the organisation's resources. Thus, these systems are highly structured and rigid enough to ensure fitness for purpose.

8.2.3 RO2: To define the success for each of the groups of cloud services

Previous research has adopted different approaches to defining success. The success of DCS applications has mainly been determined by the use of those applications. Once an application has been used, there is no significant challenge associated with converting that into ROI or improving the level of satisfaction. Thus, success is defined and measured by seven dimensions: ease of use, usefulness, that the majority of employees use it, that it is used most of the time, most employees are satisfied with it, it delivers the expected ROI, and the organisation views it as an asset. This construct was tested and found to be valid and significant statistically as well as qualitatively verifiable. From a qualitative perspective, and in terms of associated benefits, the DCS provides freedom to support creativity, security for the purpose of safety, sharing and communicating, simultaneous accessibility for collaboration, communication and working from home.

In terms of PBCS and ECS, success is a more complicated term, i.e. the perception of ease of use does not necessarily translate into use because use requires significant changes in business practices and processes within the department (for PBCS) or across the organisation (for ECS). Thus, the success construct is broken down into TAM (ease of use and usefulness), USE (most employees are using it, it is used most of the time, and most employees are satisfied with it) and investment (expected ROI, and the organisation sees it as an asset). Qualitatively, investment success is achieved only when use is accompanied by a change in business practices that results in the realisation of the benefits expected

from the change. Statistically, convergent validity is tested to ensure there are three distinctive constructs that cannot be assessed as one. This indicates the different requirements for each dimension of success. Moreover, each dimension is found to influence the other dimensions; i.e. TAM affects the success of the investment.

PBCS has distinctive benefits, due to its capacity to structure the data and processes within the department, it also reduces the mistakes and errors that affect the business process and makes the work easier for employees. Moreover, the updated data quality improved the organisations' analytic capabilities.

The system empowered the organisation to use the application, not only in normal life but also in the Covid-19 work environment, as it allows people to access the system remotely anytime and anywhere, lending flexibility to the process to make more use of it. The ECS has similar benefits to the PBCS, due to the extra benefits arising from the integration of different departments and functions designed to improve the quality of the data.

8.2.4 RO3: To define organisational capabilities required for successful assimilation of each group of cloud services

This research identified the different capabilities required to assimilate cloud services at different levels. These capabilities are classified into organisational and functional.

A. Organisational Capabilities

Organisational capabilities are proposed based on absorptive capacity theory, which defines the required practices for assimilating and exploiting knowledge within organisations. The capabilities of absorptive capacity are broken down into acquisition (to find out new cloud application services), assimilation (to put these services into the day-to-day routine), exploitation (to improve organisational performance by using it day to day), and transformation (radicalising the business model or the business processes). Since digitalisation does not demand a focus on adapting business practices and nor it require a rearranging of day-to-day services, the chief aim is to select the most appropriate service. The qualitative and quantitative evidence suggested and demonstrated the importance of selecting the right service.

Packaged Business Cloud services require efforts to embed the new third-party (the service provider) process into the function (i.e. marketing or accounting departments). Thus, there is a need for the organisation to assimilate and exploit these services, a need that requires not only the adoption of day-to-day routines (i.e. assimilation), but also the ability to seek out new opportunities for growth. The qualitative and quantitative evidence illustrated the importance of this capacity to achieve the success required from the PBCS.

ECSs do not require each department to instigate changes in isolation, rather, it requires a transformation of the entire organisation's functions and processes. Thus, the qualitative and quantitative evidence demonstrated that transformation capacity is crucial for achieving the required success for ECS.

B. Functional capabilities

Functional capabilities are documented in this research due to the criticality of achieving success for each group of cloud services. These are HR, IT and Finance.

HR Capabilities

Regarding the HR capabilities, the researcher found that successful implementation of the DCS business practices requires different types of Knowledge, Skills and Abilities (KSAs) than carrying out the work manually (i.e. documenting, disseminating, processing and archiving). The nature of the DCS is an unstructured data collection system (e.g. Word and Excel). Thus, these are the skills required for employees to structure the templates for the data inputs and outputs by themselves. Thus, the HR department's capacity to identify knowledge, skills and abilities gaps and to train and educate employees (i.e. the HR learning capability) were identified in this research and determined to be essential for its success.

PBCS is not widely available as a cloud application in the market and so finding a candidate with the specific skills needed for a certain application is not an easy option for SMEs. Thus, learning the capabilities of the human resource department were found to be significant because of the unique requirements of the application. The hands-on training was found to be the most important factor when using this set of services.

The case of enterprise systems is different because there are a limited number of enterprise systems in the marketplace, and the opportunity to find a skilled person who can facilitate their integration is easier than for functional applications. Thus, recruitment capacities represent a critical requirement for the successful implementation of this set of services. Moreover, enterprise systems need new job descriptions and specifications for new members of staff; i.e. if the job candidate is not familiar with the SAP HANA application, the possibility of performing the work becomes a challenge as expected. Thus, HR should be able to redefine job descriptions and specifications to hire the right people to alleviate the transformative and organisational efforts required when implementing BCSs.

IT capacity

Due to the nature of DCS being a plug and play feature with no need to install or deploy sophisticated applications or infrastructure, IT capabilities were not established to be critical evidence for this set of services. However, for PBCS services, IT infrastructure is required as it is to provide flexibility when adapting and adopting different software applications with different data structures. Thus, IT infrastructure capabilities are important factors, as firms should empower the use of IT in the organisation by improving the scalability, compatibility, and shareability of the system. The main reason here is that PBCS applications are in silos, and not integrated by default, which requires IT to establish the required environment for such integration to happen with the least possible data loss or associated issues.

ECS services are mainly organised across departments, with no concerns about integration capacity; rather, the main challenge relates to understanding business needs. Restructuring business processes requires fundamental business knowledge and skills from the IT department to ensure a smooth transition. Moreover, the nature of the configuration required in the applications to fit with business needs requires business knowledge and skills from the IT department. The configuration of the enterprise system cannot be undertaken swiftly by users, as in DCS, because of the complexity and technicality of these services. Thus, IT managers need to have a strong relationship with business users as a way to understand their requirements and configure the system to maximise the value of the system. Thus, the researcher found that IT management and

business alignment are crucial IT capabilities for enterprise applications. Compared to DCS and PBCS, which are relatively easy to deploy and raise no serious need for sophisticated external consultants. ECS is expensive, and thus delivery team resources availability should be planned for and managed wisely to not only complete the implementation but also to realise the benefits anticipated from such investment. Thus, this research identified a statistically positive relationship between the existence of delivery team resources and the success of the ECS implementation.

Finance capacity

The researcher found that financial capabilities were not required for either DCS services or PBCS, because their prices are affordable, and there is no need for further significant actions to subscribe to these services. However, ECSs were found to be important because the cost is substantial and requires the production of an appropriate business case as well as financial planning for ROI. This service not only requires a subscription fee but also incurs a cost for the complementary services provided by consultants and businesses. There are required resources in terms of the financial ability to secure funding. This ability does not come only from having direct access to cash but also from the ability to write up a proper business case. Thus, there is a significant positive relationship between SMEs' ability to report the business case and how best to realise these benefits and success after implementation, because the sustainability of cash flow is essential for long term commitment to the implementation. These financial department competencies and skills are conceptualised into Finance Decision Making Capabilities. This then informs the financial resources necessary to fund IT project. Thus, measuring the ROI for new IT investment is found statistically to be one of the critical capabilities required for successful delivery of the ECS.

8.2.5 RO4: To map different transformation requirements for assimilating different groups of cloud services

Each of the groups of cloud services introduces unique challenges. Thus, the transformation requirements are mapped, verified, and tested to empower the successful realisation of the benefits from each of them. While DCSs do not necessarily require a significant change in business processes, additional types of services are required. The qualitative and quantitative analysis demonstrated that the DCS has two main transformation requirements: organisational (i.e. employees' skills, individual practices, and communications from paper-based to be digital) and employees' capacity to configure and customise the applications templates (e.g. Word template, Excel templates).

The PBCS has three main transformation requirements: organisational (i.e. organisational policies and rules, and clarity of roles, responsibilities and accountabilities), BPR (i.e. level of effort required for successful transformation, level of disruption of the current operation and time required to complete BPR successfully), and service provider (i.e. professionalism, proximity to work, and language of the service provider).

Finally, ECS have four main requirements: organisational (i.e. the readiness of the structure of the organisation and the clarity of the resource allocation model in the organisation), business process reengineering (i.e. level of effort required for successful transformation, level of disruption of the current operation, and time required to complete BPR successfully), level of configuration of the service (i.e. changes in the field interfaces, level of reporting customisation, and number of customised reports), integration (i.e. the number of integrations required with clients and vendors and integration with other applications in the organisation). Each of these requirements will be concluded and mapped to the service, as required in the following sub-sections.

A. Organisational requirements

This research found that organisational requirements are essential to ensure the successful implementation of all cloud services. For DCS, the organisational transformation requirements are mainly employees' skills and practices, which are designed to document, collect and communicate data and information when using manual instruments so that

they are electronic. This process requires hands-on skills and knowledge to support the use of office applications in day-to-day communications. In terms of packaged services, organisational requirements are more fundamental. First, the organisational complexity of these structures is found to hinder successful transformation. Thus, the evidence presented in this research proves the significance of the clarity of the organisation's policies and rules, roles, responsibilities, and accountability. The justification that emerged from the qualitative analysis with regards to this is that the formal and informal power structure in the organisation may impede successful transformation. Thus, the clarity of the communication structure as understood by members in the organisation formulates the power structure and accessibility of information and knowledge, which is a significant factor when easing the process of transformation as it reduces the likelihood of surprises.

Enterprise applications require radical change on the part of the organisation. The obstacles noted for successful transformation include the rigidity of the structure and the vagueness of the resource allocation model. The researcher found that the flexibility of the structure was associated positively with the success of the transformation; and the rationale set out in the qualitative research was that enterprise services require fundamental changes, not only to employee's practices but also to the organisational structure. In addition, the resource allocation model represents a power structure within the organisation because the ability of employees to influence the allocation of budgets or resources can be a source of power. Moving from such a vague or unclear model of allocation of resources to a transparent system can generate resistance. This research found the clarity of the resource allocation model to have a positive effect on the successful transformation and delivery of these benefits.

B. Business Process Reengineering

BPR efforts were not found to be critical factors for DCS services. Whereas, for PBCS and ECS, this factor is vital for successful cloud implementation, as the process of change is a way to ensure transformation is achieved through BPR. The qualitative evidence underlines the significance of the level of effort and disruption of current operations, with the novel aspect here being the risks perceived in relation to business process

reengineering. Risks associated with the transformation of the organisation render directors and SMEs owners reluctant to change or consider the project a failure.

C. Service provider

A service provider is required for DCS and PBCS. In the case of DCS services, SMEs encounter challenges selecting an "appropriate" service provider. They need to determine whether Dropbox packages or OneDrive ones are most applicable to meet their needs. OneDrive is more integrative and compatible with Microsoft applications, requiring employees to have the skills that are offered by global providers, but which do not exist in physical locations in Saudi Arabia.

In general, the researcher did not find significant statistical evidence to support the claim of the importance of the service provider in the adoption of DCS. PBCS identified a significant positive effect from the role of service provider and the successful adoption of the cloud. PBCS requires the appropriate service provider to provide the best-in-practices models to fit with the industry and its needs in terms of the suitability of the payroll, its connection with banks, connections with taxes and payment gateways. Moreover, in Saudi Arabia, the language of the service provider was found to be a significant factor in the success of the delivery of PBCS. Interestingly, for ECS, this research did not find any statistical evidence to claim the importance of the service provider in successful implementation. Possibly, the reason for this is the dependence on internal consultants rather than the service provider. This point would need to be examined in future research.

D. Configuration and Customisation

Since DCS services are unstructured, this research found a positive association with configuration and customisation efforts and success. PBCS, on the other hand, provides a structured package of services with predefined parameters. Thus, these efforts have not been found to be associated with success. ECS is a structured application with some configuration features that can be adapted to fit different organisations' requirements. These ECS customisation and configuration affordances have been found to be positively associated with success. Moreover, integration efforts were found to be among the requirements for the enterprise system to connect with other external and internal organisations and departments.

8.3 Contributions to Knowledge

The main contribution for this research is to offer a new understanding of how SMEs assimilate different groups of Business Cloud Services (BCSs) successfully. This includes a new state of the art framework, as in (Figure 7-1), that define the essential capabilities and transformation requirements to assimilate different groups of BCSs successfully. This research advances existing knowledge of cloud services adoption in SME's context, discussed in (Section 2.2.2), by recognising the heterogeneous nature of cloud services, delineating them into three groups: Digitalised Cloud Services (DCSs), Packaged Business Cloud Services (PBCSs) and Enterprise Cloud Services (ECSs). Each of these groups require unique capabilities and transformation requirements which have been identified in this research for successful assimilation of BCSs, as summarised in (Table 7-1). The study developed a novel BCSs readiness assessment tool, (Table 7-2) to assess and assist organisations to identify strengths and weaknesses and thus, proposed strategies to remedy weaknesses when delivering on the benefits arising from the investment in the BCSs.

The Business Cloud Services (BCSs) framework has the following three novel sub-models:

1- A novel model for understanding Digitalised Cloud Services (DCSs) that define the different capabilities and transformation requirements for successful delivery of DCSs as in (Figure 4.4). It offers a new definition of the DCS as to be "an accessible centralised secured storage system which allows version controls". The addition here is the "version controls", which enables business users to use these services in collaboration and setting accountability and responsibilities. The capabilities required for these services are acquisition capability and HR learning capability. The transformation requirements are organisational requirements (employees' skills, practices and communication) and individual requirements (employees' willingness and ability to customise and configure). This research added new elements of success as the "benefits" from embracing DCSs into the work routines to be communication, collaboration, and working from home.

2- A novel model for understanding Packaged Business Cloud Services (PBCSs) to define capabilities and transformation requirements for successful delivery of PBCSs, as in

(Figure 5.4). This research has a narrative PBCSs definition as “a structured cloud system that offers monthly paid pre-defined business function solutions based on the industry best practice defined by the service provider”. The main technical resource comes from the addition of being standalone silo applications between business functions that need expert or consultant to integrate different business functional applications. The unique capabilities are presented as assimilation, exploitation, HR learning and IT infrastructure capabilities. The transformation requirements are service provider, business process reengineering and organisation requirements (the clarity of organisational policies, rules, responsibilities, accountabilities, and reporting channels within and between departments). This research added new elements of success as the “benefits” arising from assimilating PBCSs into; first, being cloud-based services include the scalability, accessibility and virtually unlimited storage capacity. Second, based on cloud function-based benefits due to its capacity to structure the processes within the department include; efficiency for the HR and accounting systems and effectiveness in terms of planning, monitoring and tracking for CRM systems.

3- A novel model for understanding Enterprise Cloud Services (ECSs) to define the different capabilities and transformation requirements for successful delivery of in ECSs, shown in (Figure 6.4). The technical resources for the enterprise systems are characterised by enterprise-wide application, analytic power, full integration and automation, accessibility, and secured online storage to fulfil multiple business tasks simultaneously. The required capabilities are transformation capacity, IT business alignment, HR management (learning and recruitment) and this research added a new element which is the finance capabilities (decision making & secure funding), as a key driver of success. There are four transformation requirements; organisational requirements (alignment with vision, mission, strategy, resource allocation and organisation planning process), business process reengineering, integration requirements and the quality of team delivery resources are added as an emergent theme. Enterprise cloud services success as benefits which are translated into positive perceptions towards the enterprise system due to the extra benefits arising from the integration of different departments and functions designed to improve the quality of the data, empowering organisations to grow faster.

8.4 Research Professional Implication (Recommendations)

There are several professional implications arising from this research. The research recommendations feed into SMEs, service providers, and governments' decisions and policies.

8.4.1 SMEs

The recommendations for SMEs consider how to upgrade from one cloud service group to another to assimilate each set of services.

8.4.1.1 Upgrading from cloud service group to another

The professional implications of upgrading from one cloud service group to another reveal that entrepreneurial capabilities are inadequate. That is, effective HR, as well as IT and finance capabilities, are needed to deliver BCSs successfully. Some organisations need to move up to a certain level, but this could prove to be quite risky. According to the research findings, the organisational requirements for digitalising manual work differ significantly from those required to embrace a functional application or enterprise-wide applications. In other words, success in digitalising paperwork does not guarantee success assimilating new initiatives and automating business processes within the department or across departments. At the same time, the success of digitalising paperwork is a key requirement for moving to assimilate the benefits that arise from adopting functional applications, as this could improve the readiness of the organisation to accept these technological interventions.

Similarly, the successful integration of functional cloud services into daily routines does not guarantee the success of enterprise-wide applications. SMEs must be aware of the disruption expected and, as such, are required to move from silos to integrated platform services. Cloud as a technology makes the transition easier and faster than traditional on-premises applications, due to scalability features. However, the gap between functional and ECS is dramatic, and, as such, requires intentional work and effort from the organisation to move successfully.

8.4.1.2 Digitalised Cloud Services

Digitalised cloud services to support intuitive thinking, appear the most complicated at the individual level and the simplest at the organisation level. They are unstructured and require effort from the user to structure the data (i.e. an empty sheet of paper requires more effort to fill than a structured interface with predefined fields to complete). Thus, these services require effort from the organisation to teach staff how to use a flexible approach to improve business outcomes. Thus, the initial advice offered here is that digital cloud services, although perceived as easy to use because of their flexibility, require significant time and effort to structure them effectively to benefit the organisation. This necessitates both individual readiness to accept new skills and practices and the organisational capability to train and teach them.

This research advises SMEs to establish a strong acquisition capacity that can be updated to increase awareness of the latest technologies in the market. For those organisations that have not embraced cloud services to date, it is important to be able to identify the right combination of cloud services to digitalise their routine work. Although different service providers could experience a level of integration on digitalised platforms, synchronisation and error continue to exist. At the same time, if one service provider is adopted to benefit all of the cloud service providers (e.g. Microsoft or OneDrive), the possibility of issues will be lower, and the acceptance of other services from the same service provider will be higher. Therefore, secondary advice, to improve organisational capability requires the establishment of acquisition capabilities able to identify the right mixture of cloud services, especially in the form of digitalised services.

8.4.1.3 Package Business Cloud Services

Package Business Cloud services are attractive to SMEs because they leverage business practices by adopting best practices, as delivered by the service provider. Thus, the quality of the service provider plays a significant role in the process. The first recommendation here is to select the right service provider able to offer the service in the mother tongue of the country (i.e. Arabic). The reason for this advice is that the employees of SMEs may be overwhelmed by the implementation of the structured application, and this may limit their freedom in interactions and when doing business. Thus, the complexities of a foreign

language trainer could adversely affect their acceptance. The second set of advice relates to the service provider, as the IT department should know how to integrate this functional silo cloud service with other cloud services in the organisation, i.e. regarding the functionality of the cloud service, any inability to integrate it with other services in place could significantly reduce value and increase resistance.

The third category of advice concerns the nexus between the organisational structure and the newly structured service. These packaged services are highly structured and not easily customised to fit with the SMEs "As-Is" situation. Thus, BPR is a viable option for SMEs, and the effort to re-design the best practice cloud service, even if it is open-source, could entail huge expenses and risks not affordable for SMEs. Thus, the organisation's agility in terms of its capacity to perform BPR successfully is a key requirement for SMEs striving to achieve success. The fourth consideration relates to the same point and is the organisation's capacity to assimilate and exploit new opportunities. This is also central to organisational agility and the ability to benefit from the affordances resulting from the investment in the package cloud services.

8.4.1.4 Enterprise Cloud Services

Enterprise services are unique for three different reasons: expensive, highly structured, and post-implementation performance challenges.

Enterprise systems require substantial investment, which can place the SMEs into financial hardship, making it enthusiastic about quitting the implementation prematurely. Thus, the advice to SMEs is to put forward a proper business case for embracing cloud services and examining their strategic importance and the sustainability of cash flow before proceeding to implementation.

Enterprise systems are highly structured, not only within departments as packaged services but also across departments. Thus, the effort made to conduct BPR is greater, and businesses could consequently suffer from business continuity risks. These issues are less than on-premises cases; but still exist. Therefore, there are two different sorts of advice available to assist with managing these risks. First, there is a need to maintain a collaborative relationship between IT and business departments, and to ensure an effective IT business partnership is in place. IT providers can suggest out of the box

solutions to business departments in the case of an outage. An IT provider's ability to understand the business could also be a factor in determining the ideal adoption strategy for the ECS. The second set of advice is to improve the organisation's transformation capacity prior to adopting the ECS. Thus, this research underlines the value of improving organisational agility and the ability to accept possible transformation of the business process, to ensure the implementation of enterprise services.

The third aspect of the uniqueness of ECS relates to the benefits associated with the time it needs to materialise. Therefore, it is highly recommended to invest in consultants in the post-implementation stage as a way to ensure the sustainability of benefits and to establish accountability and responsibility for the benefits realisation process.

8.4.2 Service Provider

There are several recommendations that can be made to service providers resulting from this research. Organisations usually start with digitalised services then upgrade to functional and enterprise-related services. Currently, the market leaders in digitalised services are Microsoft and OneDrive. They aim to obtain the advantage of being dominant in the market and also provide functional services and enterprise services to SMEs. In the context of Saudi Arabia, the dominant leaders in functional applications are local companies, but hardly any are leaders in the domain of enterprise services. The majority of enterprise services are international providers, such as SAP and Oracle. There is a significant opportunity for service providers in Saudi Arabia to establish services like SAP so that they can prevail with less effort. There are several reasons for this. First, local providers are closer to SMEs and speak Arabic. Second, SMEs are reluctant to change from local service providers offering silos services to the acceptance of enterprise services. Third, the cost for local service providers is significantly lower than that for international service providers. Moreover, the government motivates and supports local service provision, and does not offer assistance to those choosing to utilise international service providers. The government in Saudi Arabia stopped the stripe payment gateway (the main worldwide payment gateway for international payments), and new local service providers are now offering alternative payment gateways integrated with local enterprise service providers. Currently, international enterprise service providers are at a

disadvantage because of their lack of integration with local payment gateways. Thus, at present, there is a huge opportunity for local service providers to offer such enterprise services.

8.4.3 Government

The Saudi government has a powerful vision to empower SMEs in Saudi Arabia. It has also confirmed the importance of the cloud services. However, in terms of support, it remains limited, and SMEs are struggling to negotiate the availability and cost of consultants who can advise and guide them. In addition, SMEs require funding to invest in the changes led by enterprise system services, not only in terms of technology, but, most importantly, with regard to the cost of change. The government has offered local cloud services to encourage SMEs' adoption, but this research revealed a significant proportion of SMEs are not aware of the benefits and their possible positive effects on business performance.

8.5 Research Areas of Improvements

There are three main areas for improvement identified by the research findings. These are replicability and generalisability, contextualisation of the industry and the service provider, and the government's perspective on the process.

8.5.1 Research Methodology Effectiveness: Replicability and Generalisation

The current research methodology was effective enough to fulfil this research aim and objectives and ensured the quality of the findings through triangulation of the evidence and methods. It implemented mixed methodologies, including interviews to generalise findings from Saudi SMEs contexts and validated the data using case study research. This triangulation of the methodologies augmented the value of the research findings. However, this research has investigated mainly a single context which is the Saudi context, in detail. The potential limitations affect the generalisation and transferability of the findings in other developed countries such as the United Kingdom, because the institutional and legal framework is significantly different. Moreover, in the UK, interfaces are in English by default, which is also the mother tongue in the country. Thus, any application in English can readily penetrate the UK market, which is not the case for

Saudi Arabia, where Arabic is used. Another example of the significant difference between the two countries, is that the financial system in the UK is more liberal than that of Saudi Arabia, and virtually all payment gateways and all applications are available in the UK, whereas there are restrictions imposed on the Saudi marketplace. Apart from the payment gateway, the taxation system and national insurance system differ, as most international functional and enterprise services are aligned with the UK system but not the Saudi system. International service providers are not accessible in Saudi Arabia, unlike the majority of European and American countries. Limiting the generalisability of findings internationally.

8.5.2 Contextualisation of Industry Specific results

The limited capacity to generalise from this research to other countries is compensated for its valuable contextualisation to Saudi Arabia. The questionnaire data and expert interviews are broadly applicable to different sectors and variously sized SMEs in Saudi Arabia. However, contextualisation also provides a deeper level of understanding, by capturing the reality from the users in a certain context or industry. This research used case studies to validate and triangulate the collected data, not to generate new themes or to develop new theories. Thus, a longitudinal timeframe (not cross-sectional) could be conducted in the future to assess maturity levels and an implementation roadmap so that lessons can be learnt over time. New research based on the data from the case study is advised to identify new themes that were not captured through this research methodology.

8.5.3 Data security risks perspective

This research focused mainly on SME's soft and functional organisational aspects. Thus, the main research framework concentrated on SMEs' behaviours with regard to business cloud services which lends confidence in implementing these business cloud services. However, the inclusion of technical aspects/issues such as security, legacy systems, and accessibility of cloud services, could provide a macro level, not only to understand the SME’s organisational perspective but also to include these technical aspects. Thus, upcoming research is endorsed to address this macro perspective which may improve the success of implementing the business cloud services effectively.

8.5.4 Other stakeholder perspectives

experiences by collating the views of experts, but not those of the service provider or the government. This was because the ultimate purpose of the research was to understand the SME's perspective and the possible mechanisms, they can adapt to leverage the use of the business cloud services. Without a doubt, integrating service provider and government perspectives could deliver a macro perspective, instead of the current micro perspective. The macro perspective could help when formulating government laws and policies to motivate and empower the implementation of cloud services in Saudi SMEs. Future research is recommended to address this macro perspective.

8.6 Future Research

There are new venues out of this research on the theories explaining the success of adoption of the different business cloud services. They can be classified on SMEs factors that could play a role in the successful adoption of different groups of business cloud services and complex factors in the current AS-IS that could impede the successful assimilation of the cloud services.

This research focused on the organisational perspective rather than the individual or macro perspective. Thus, the first two venues proposed for the research concern institutional pressures (macro perspective) and entrepreneurial orientation (individual perspective) as theoretical lenses to explain the successful adoption of business cloud services in the Saudi context. The following two venues focus on a socio-technical perspective to explain success in the adoption of business cloud services. The socio perspective focuses mainly on organisational complexity, while the technical perspective focuses on other aspects of cloud services/technologies that were not covered in this research.

8.6.1 Institutional pressures and BCSS adoption

The current research focused on the micro perspective to understand SMEs' behaviours with regard to business cloud services; however, this research did not provide the means to capture macro perspectives. Macro perspectives could include institutional pressure to adopt BCSs successfully. Institutional pressures could be coercive (i.e. government),

mimetic (i.e. the other firms in the country), and normative (i.e. the educational regime and norms in the industry), and all could play a significant role as in the ERP context (Al-Ma'Aitah, 2017). It is a pitfall to have a solo perspective in understanding the agents' behaviours in the ecosystem. Mid-range theories could provide a foundation for explaining the dynamics of the interactions between SMEs, Service providers, government and the successful adoption of BCSs.

8.6.2 Entrepreneurship orientation and Business Cloud Services

The second perspective proposes a holistic view to explain the successful adoption of cloud services in SMEs as the entrepreneurial orientation. Since SMEs highly reflect the orientation and personality of entrepreneurs, the adoption behaviour of a cloud business could be a factor in explaining its success. For instance, entrepreneurs with a passion for technology could adopt more cloud services than those who are technology avoiders. Dedicated research into entrepreneurs' roles might be useful when adopting BCSs.

8.6.3 Complexity and success

This research has provided evidence that organisational complexity could play a impeding role with regard to the cloudisation of the data and associated processes. However, the evidence is weak and insufficient in this research. Dedicated research into organisational complexity (e.g. changes in the work environment, number of elements in the work environment, clarity and vagueness of rules and regulations) shall be activated to define the strategies for managing these complexities before commencing cloud services in general and enterprise ones in particular. Enterprise systems may conceal deeply hidden issues in an organisation and might therefore make things worse. Thus, it is highly advised to conduct research dedicated to the role of organisational complexity as a barrier to successful adoption of enterprise services.

8.7 Conclusion

This research concludes that business cloud computing applications are dissimilar in the required transformational and organisational capabilities. This research classified the business cloud services into DCS, PBCS, and ECS. While the DCS seems to be less sophisticated in the installation, it requires more personal skills to customise the use of

these applications to fit for the organisational needs. PBCS are more structured applications than for the DCS and gives more best-in-practices solutions than DCS which requires less customisation in the use. However, PBCS requires more changes in the organisation. The ECS are the most expensive and requires substantial changes in the organisation to recoup the benefits from these investments. Organisations shall be aware of the differences in the organisational and transformational requirements for each as lack of preparedness in moving from a class to another class could lead to unintended consequences. The success in using of one class of cloud services does not necessarily means the success in other ones. This research provides the industry with a tool to assess the organisation readiness for each class to avoid moving too fast without being well prepared for each class of business cloud services.

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Appendices

Appendix A: Questionnaire (Items and Administration)

English

Consent Form

Dear Respondent,

This research is conducted as part of my PhD at Cranfield University.

It aims to enable organisations to Identify their strength and weakness areas for successful adoption of the Business Cloud Application.

By completing this assessment, the researcher will send you a copy of the research results.

It takes **10 minutes** to complete. If you have any inquiry, do not hesitate to contact me directly at t.alsafi@cranfield.ac.uk

by clicking **"I Consent"**, you are indicating you have agreed to participate to this research study.

Kind Regards,

Tariq Alsafi

PhD Cloud Researcher

Do you consent to participate?

- "I consent"
- "I don't consent"

Demographic Section

In which country do you currently working?

Business nature of your organisation:

What is your role within the organisation?

Organisation Age (in Years):

Number of employees within your organisation?

Annual turnover of your organisation (US $):

Business Cloud Application\s within your organisation

Do you use any of the followings in your workplace (you can select more than one)?

- ☐ Yes, I use Cloud enterprise systems (e.g. SAP, Oracle, AWS)
- ☐ Yes, I use Cloud Business Function Applications (e.g. Xerox, Free agent, e-CRM, Expenses, QuickBooks, Sage)
- ☐ Yes, I use the Business Cloud Storage Applications (e.g. OneDrive, DropBox, Google Drive)
- ☐ No I do not use any of the cloud applications in my work place

According to the levels above, To what extent do you agree with these statements regarding the Business Cloud Applications in your organisation?

0 not existed (not relevant- i.e. I do not have any of these applications)
1 Strongly disagree
7 Strongly Agree

Easy to use
Useful
Most of employees are using it
I use it most of the time
Most of employees are satisfied with it
It gets the expected ROI
My organisation sees it as an asset

From your opinion, which applications face these challenges regardsing Business Process Re-engineering (BPR)

0 not existed (not relevant- i.e. I do not have any of these applications)
1 Strongly disagree
7 Strongly Agree

	Level 1								Level 2								Level 3							
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
Easy to use	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Useful	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Most of employees are using it	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
I use it most of the time	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Most of employees are satisfied with it	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
It gets the expected ROI	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
My organisation sees it as an asset	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

From your opinion, which applications face these challenges regardsing Business Process Re-engineering (BPR)

BPRs is the level of change required in the current business process to use the application appropriately

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenges

	Level 1							Level 2							Level 3						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
BPR efforts in terms of Time	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
BPR efforts in terms of Cost	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The significance of the BPR disruptions of the current operations	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
BPR risks (e.g. loss in productivity)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

For a successful implementation of your applications (levels), level of change in the current state to fi with the application is

1 very few change
7 very wide change

	Level 1							Level 2							Level 3						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Organisation strategy, vision, and mission	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Culture	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Organisational policies and rules	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The roles, responsibilities and accountabilities in the organisation	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The organisation structure	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The reporting flow across departments	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Communication in the same department	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Resource allocation in the organisation	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
The organisation planning process	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Employees skills	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Employees practices	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

For a successful implementation of each of the following system, level of change in the application in terms of Customisation and Configuration to fit with the organisation

1 very few change
7 very wide change

	Level 1							Level 2							Level 3						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Level of customization of the system (I.e, programming or changing in the features	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Level of the configuration of the system (i.e. changing the fields in the interface)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Level of reporting customisation	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Level of customisation of the interface	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Number of customised interfaces	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Level of change in the databases	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

For a successful implementation of each of the cloud applications, the level and size of data required to migrate from the old to the new application is

1 Minimal
7 Massive

	Level 1							Level 2							Level 3						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Number of the fields (i.e. name, phone, address) to be migrated	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Number of inconsistent fields between the new and old systems	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Size of the data to be migrated	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Number of the differences in the formats between the new and old system	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

For a successful implementation of your cloud applications, there could be challenges with the service providers

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenges

	Level 1							Level 2							Level 3						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Reliability	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Professionalism	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Quality	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Responsiveness	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Delivery on time	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Closeness to the workplace	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Language of the service provider	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Availability in the implementation time	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

For a successful implementation of each of the following cloud applications, there could be challenges with integrating with other applications

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenge

	Level 1							Level 2							Level 3						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
Integrating with different clients	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Integrating with different vendors	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Integrating with third party	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

BPRs is the level of change required in the current business process to use the application appropriately

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenges

BPR efforts in terms of Time
BPR efforts in terms of Cost
The significance of the BPR disruptions of the current operations
BPR risks (e.g. loss in productivity)

For a successful implementation of your applications (levels), level of change in the current state to fit with the application is

1 very few change
7 very wide change

Organisation strategy, vision, and mission
Culture
Organisational policies and rules
The roles, responsibilities and accountabilities in the organisation
The organisation structure
The reporting flow across departments
Communication in the same department
Resource allocation in the organisation
The organisation planning process
Employees skills
Employees practices

For a successful implementation of each of the following system, level of change in the application in terms of Customisation and Configuration to fit with the organisation

1 very few change
7 very wide change

Level of customization of the system (I.e, programming or changing in the features
Level of the configuration of the system (i.e. changing the fields in the interface)
Level of reporting customisation
Level of customisation of the interface
Number of customised interfaces
Level of change in the databases

For a successful implementation of each of the cloud applications, the level and size of data required to migrate from the old to the new application is

1 Minimal
7 Massive

Number of the fields (i.e. name, phone, address) to be migrated
Number of inconsistent fields between the new and old systems
Size of the data to be migrated
Number of the differences in the formats between the new and old system

For a successful implementation of your cloud applications, there could be challenges with the service providers

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenges

Reliability
Professionalism
Quality
Responsiveness
Delivery on time
Closeness to the workplace
Language of the service provider
Availability in the implementation time

For a successful implementation of each of the following cloud applications, there could be challenges with integrating with other applications

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenge

Integrating with different clients
Integrating with different vendors
Integrating with third party organisations
Integration with other applications in the organisation
Integration with other devices/technologies in the organisations

For a successful implementation of each of the following cloud applications, there could be challenges with human resources

1 Not a challenge at all
2 Not a challenge
3 OK
4 Challenge
7 A Great Challenges

Diversity of skills required to deliver it
Sophistication of the skills required to deliver it
Cost of the skilled consultants to deliver it
Availability of the consultants for the post-implementation services

Capabilities

In your organisation, HR Department is

1 Strongly Disagree
7 Strongly Agree

	1	2	3	4	5	6	7
is able to deliver the appropriate training courses to us	O	O	O	O	O	O	O
is effective in delivering the required training courses	O	O	O	O	O	O	O
knows our training needs effectively	O	O	O	O	O	O	O
is able to recruit the best trainers for us	O	O	O	O	O	O	O
reaches the best candidate in the market	O	O	O	O	O	O	O
finds the best people in the market	O	O	O	O	O	O	O
appoints the best people in the market	O	O	O	O	O	O	O
considers IT literacy in the recruitment process	O	O	O	O	O	O	O
considers the weakness in IT is not acceptable for selecting new job candidate.	O	O	O	O	O	O	O

In your organisation, Finance Department

1 Strongly Disagree
7 Strongly Agree

	1	2	3	4	5	6	7
uses prioritising methods for evaluating the initiatives	O	O	O	O	O	O	O
Able to get the finance required to fund IT projects	O	O	O	O	O	O	O
Measures the ROI for new IT investments	O	O	O	O	O	O	O
Develops business cases for new IT initiatives	O	O	O	O	O	O	O
secures the government funds for supporting company operations (e.g. Kafalah)	O	O	O	O	O	O	O
searches the government funds for supporting company operations	O	O	O	O	O	O	O
writes effective proposals for getting government funds for investing in ICT	O	O	O	O	O	O	O

In your organisation,

1 Strongly Disagree
7 Strongly Agree

	1
The search for relevant information concerning our industry is every-day business in our company	C
Our management motivates the employees to use information sources within our industry	C
In our company ideas and concepts are communicated cross-departmental	C
Our management emphasizes cross-departmental support to solve problems	C
There is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments	C
Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements	C
Our management supports the development of prototypes	C
Our company regularly reconsiders technologies and adapts them accordant to new knowledge	C
Our company has the ability to work more effective by adopting new technologies	C
Our employees have the ability to structure and to use collected knowledge	C
Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available	C
Our employees successfully link existing knowledge with new insights	C
Our employees are able to apply new knowledge in their practical work	C

In your organisation, within the IT department:

1 Strongly Disagree
7 Strongly Agree

	1	2	3	4	5	6	7
Our information systems are scalable	O	O	O	O	O	O	O
Our information systems are compatible	O	O	O	O	O	O	O
Our information systems are adopted to share information	O	O	O	O	O	O	O
Our information systems are modular	O	O	O	O	O	O	O
Our firm transfers data with our suppliers	O	O	O	O	O	O	O
Our firm connects our systems with our suppliers' systems, which allows for the sharing of real-time information with our suppliers	O	O	O	O	O	O	O

	1	2	3	4	5	6	7
Our firm combines information across different suppliers to support decision making	○	○	○	○	○	○	○
IT department plans reflect the business plan goals	○	○	○	○	○	○	○
IT department plans support the business strategies	○	○	○	○	○	○	○
IT department plans recognize external business environment forces	○	○	○	○	○	○	○
business plans refer to IT Plans	○	○	○	○	○	○	○
business plans refer to specific information technologies	○	○	○	○	○	○	○
business plans have reasonable expectations of IT	○	○	○	○	○	○	○
effectiveness of IT planning in our firm is better than that of other firms in our industry	○	○	○	○	○	○	○
IT project management practices in our firm are better than that in other firms in our industry	○	○	○	○	○	○	○
Planning for security control, standard compliance, and disaster recovery in our firm is better than that in other firms in our industry	○	○	○	○	○	○	○
System development practices in our firm are better than those in other firms in our industry	○	○	○	○	○	○	○
Consistency of IT policies throughout the enterprise in our firm is better than that in other firms in our industry	○	○	○	○	○	○	○
IT evaluation and control systems in our firm are better than those in other firms in our industry	○	○	○	○	○	○	○

Open-ended questions

what do you think about questionnaire?

Do you have any other comments?

Please leave your email here if you want to receive a copy of the analysis:

If you are interested in this research, would you prefer to:

- ☐ Online interview
- ☐ Case study research
- ☐ Survey

We take your data privacy very seriously and will only use your information to provide the products and services you have requested from us. We will not sell, license or trade your information without your consent. For more information about how your data will be processed, please see our privacy policy. Where required, we may share your information across the University and with our commercial subsidiaries. You can opt out of marketing communications from us at any time.

Powered by Qualtrics

Appendix B: Participants (Consent Form)

English - United Kingdom

Dear Respondent,

This research is conducted as part of my PhD at Cranfield University.

It aims to enable organisations to Identify their strength and weakness areas for successful adoption of the Business Cloud Application.

By completing this assessment, the researcher will send you a copy of the report results.

If you have any inquiry, do not hesitate to contact me directly at t.alsafi@cranfield.ac.uk

by clicking "I Consent", you are indicating you have agreed to participate to this research study.

Kind Regards,

Tariq Alsafi

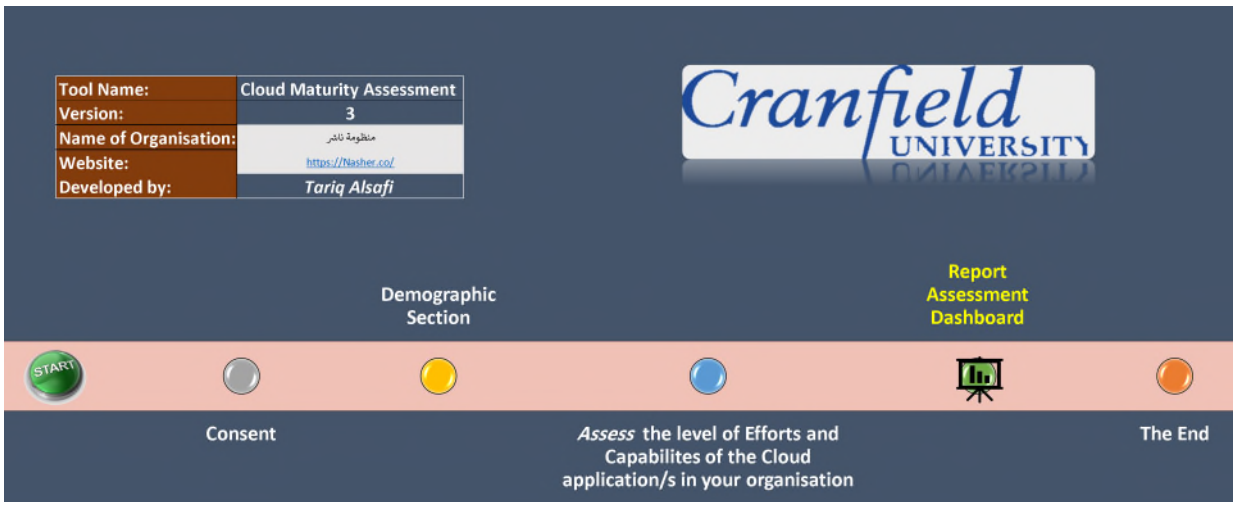
PhD Cloud Researcher

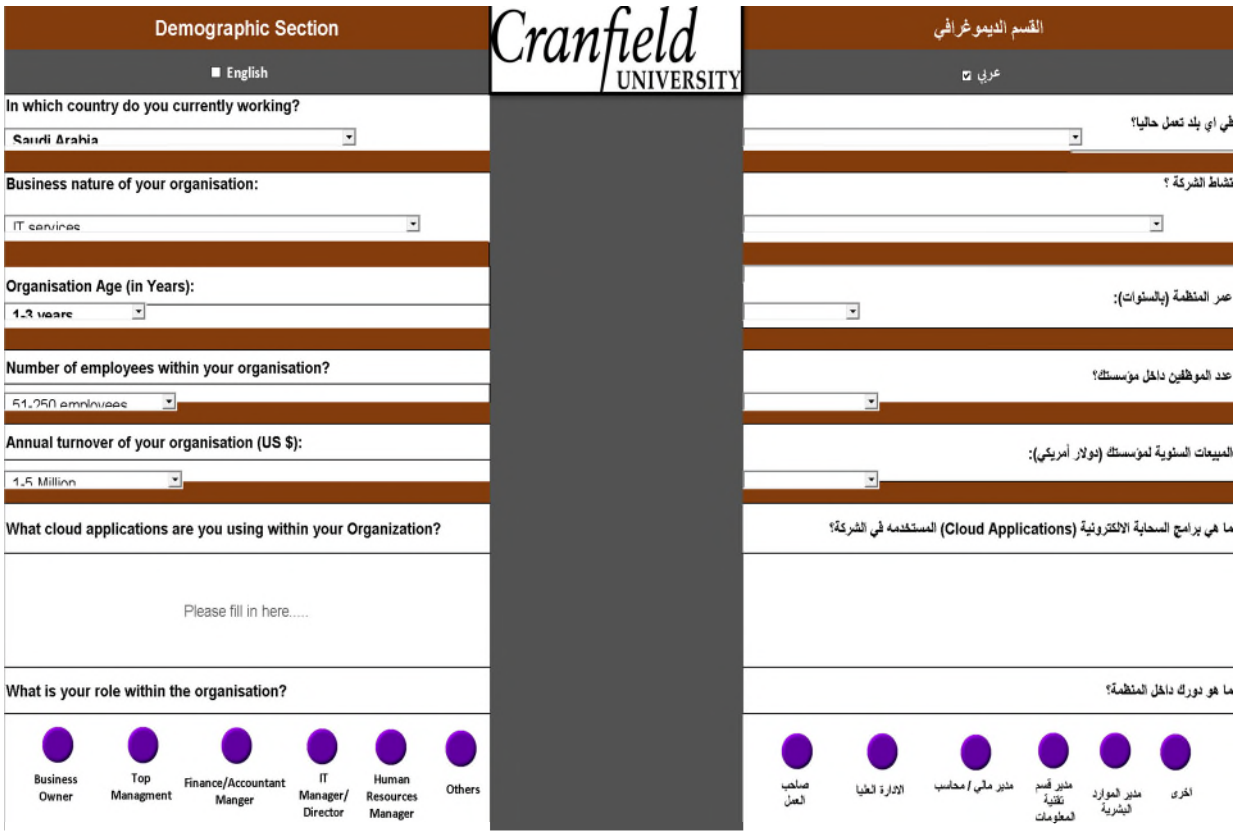
Do you consent to participate?

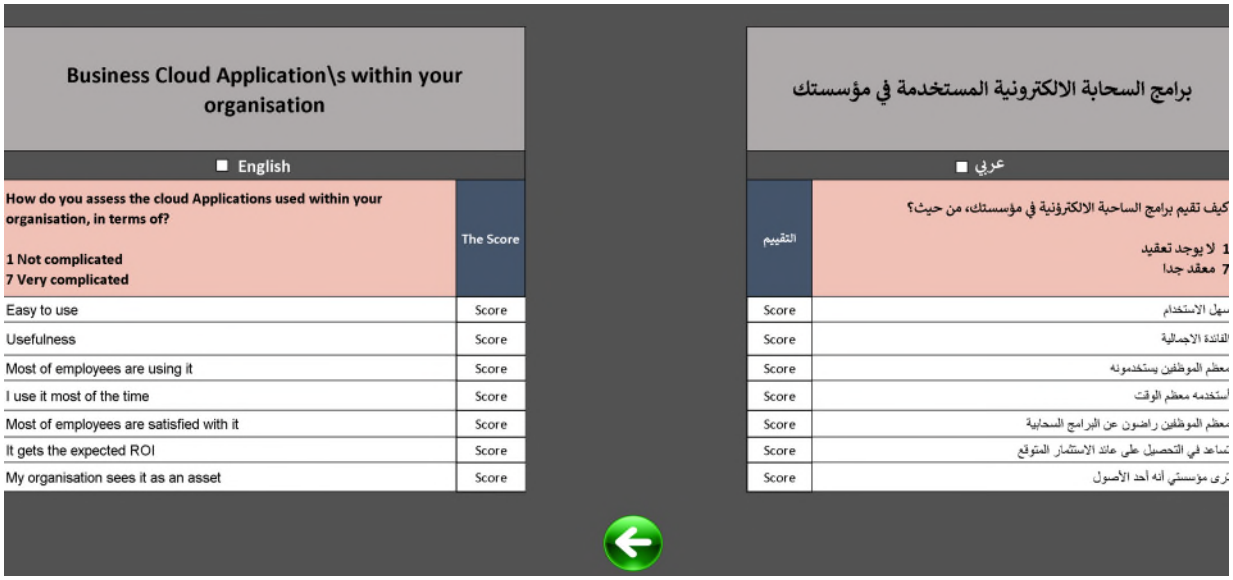
“I Agree”

“I don't Agree”

Appendix C: Business Cloud Services (BCSs) Assessment Tool







Business Cloud Application\s within your organisation

English

How do you assess the cloud Applications used within your organisation, in terms of? 1 Not complicated 7 Very complicated	The Score
Easy to use	Score
Usefulness	Score
Most of employees are using it	Score
I use it most of the time	Score
Most of employees are satisfied with it	Score
It gets the expected ROI	Score
My organisation sees it as an asset	Score

برامج السحابة الالكترونية المستخدمة في مؤسستك

عربي

كيف تقيم برامج الساحبة الالكترونية في مؤسستك، من حيث؟ 1 لا يوجد تعقيد 7 معقد جدا	التقييم
سهل الاستخدام	Score
الفائدة الاجمالية	Score
معظم الموظفين يستخدمونه	Score
استخدمه معظم الوقت	Score
معظم الموظفين راضون عن البرامج السحابية	Score
تساعد في التحصيل على عائد الاستثمار المتوقع	Score
ترى مؤسستي أنه أحد الأصول	Score

In your organisation, 1 Strongly Disagree 7 Strongly Agree	The Score	التقييم	في مؤسستك ، 1 لا أوافق بشدة 7 أوافق بشدة
The search for relevant information concerning our industry is every-day business in our company	Score	5	البحث عن المعلومات / البرامج ذات الصلة المتعلقة بصناعتنا هو عمل يومي في شركتنا
Our management motivates the employees to use information sources within our industry	Score	5	تحفز إدارتنا الموظفين على استخدام مصادر المعلومات المتعلقة في صناعتنا
In our company ideas and concepts are communicated cross-departmental	Score	5	هناك آلية توصيل الأفكار والمفاهيم في شركتنا عبر الإدارات
In our company there is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments	Score	5	يوجد في شركتنا تدفق سريع للمعلومات ، على سبيل المثال (إذا حصل اي قسم على معلومات مهمة ، فإنها تنقل هذه المعلومات على الفور إلى جميع وحدات أو أقسام العمل الأخرى)
Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements	Score	7	تتطلب إدارتنا اجتماعات دورية بين الإدارات لتبادل التطورات الجديدة والمشاكل والإنجازات
Our management supports the development of prototypes	Score	4	تدعم إدارتنا تطوير نماذج أولية والتحقق منها قبل الاقرار بها
Our company regularly reconsiders technologies and adapts them accordant to new knowledge	Score	6	تعيد شركتنا النظر في التقنيات بانتظام واختيارها وفقًا لمعلومات حديثه
Our employees are used to absorb new knowledge as well as to prepare it for further purposes and to make it available	Score	5	يستوعب موظفينا البرامج الجديدة للاستخدام بالطريقة المثلى
Our employees successfully link existing knowledge with new insights	Score	6	موظفونا لديهم القدرة في ربط المعرفة الحالية بالرؤى الجديدة
Our employees are able to apply new knowledge in their practical work	Score	4	موظفونا قادرون على تطبيق المعرفة الجديدة في عملهم
In your Organisaition, IT Department is: 1 Strongly Disagree 7 Strongly Agree	The Score	التقييم	في مؤسستك ، في قسم تقنية المعلومات: 1 لا أوافق بشدة 7 أوافق بشدة
IT plans reflect the business plan goals	Score	4	تعكس خطط قسم تقنية المعلومات أهداف خطة عمل الادارة
IT plans support the business strategies	Score	5	خطط قسم تقنية المعلومات تدعم استراتيجيات العمل
IT plans recognize external business environment forces	Score	6	يتعرف قسم نظم المعلومات على الأعمال الخارجية المتاحة للاستفادة منها في شركتنا
Effectiveness of IT planning in our firm is better than that of other firms in our industry	Score	4	فعالية التخطيط لتكنولوجيا المعلومات في شركتنا أفضل من الشركات الأخرى
IT project management practices in our firm are better than that in other firms in our industry	Score	5	ممارسات إدارة مشاريع تكنولوجيا المعلومات في شركتنا أفضل من تلك الموجودة في الشركات الأخرى
Consistency of IT policies throughout the enterprise in our firm is better than that in other firms in our industry	Score	7	تناسق سياسات تكنولوجيا المعلومات في جميع أنحاء المؤسسة في شركتنا أفضل من تلك التي في الشركات الأخرى
IT evaluation in our firm are better than those in other firms in our industry	Score	4	تعد أنظمة التقييم لتكنولوجيا المعلومات في شركتنا أفضل من تلك الموجودة في الشركات الأخرى

The End

النهاية

Start | DemoG | Cloud Assesmnt | Mangmt | IT | HR | Assesment Report Dashboard. | Capabiltes Assesment | Complexities

IT Manager/Specialist			مدير / اخصائي تقنية المعلومات	
English			عربي	
How do you perceive the relationship with your service providers? ☐ 1- Not a challenge 7- Great challenge	The Score		كيف ترى العلاقة مع مزودي الخدمة السحابية لديك من حيث؟ ☑ 1- لا يوجد تحدي 7- تحدي الكبير	التقييم
Reliability	Score		الموثوقية	3
Professionalism	Score		الاحترافية	6
Quality	Score		الجودة	4
Responsiveness	Score		سرعة الإستجابة	3
Delivery on time	Score		تصنيب البرامج على الوقت	2
Closeness to the workplace	Score		القرب من مكان العمل	6
Language of the service provider	Score		لغة مقدم الخدمة في التواصل معك	1
Availability in the implementation time	Score		توفر مزودي الخدمة في وقت التنفيذ عند الحاجه اليهم	3
What do you think of the level of customisation required for your implementation in terms of? 1 Very few change 7 Very wide change	The Score		ما رأيك في مستوى التغيير المطلوب للبرمجه في النظام الخاص بك من حيث؟ 1 تغيير قليل جدا 7 تغيير واسع جدا	التقييم
Level of customisation of the system (I.e, programming or changing in the features	Score		مستوى تخصيص النظام (أي البرمجة أو تغيير الميزات داخل النظام)	2
Level of configuration of the system (i.e. changing the fields in the interface)	Score		مستوى تكوين النظام (أي تغيير الحقول في الواجهة)	3
Level of reporting customisation	Score		مستوى تخصيص التقارير	3
Number of customised reports	Score		عدد التقارير المخصصة	3
Number of customised interfaces	Score		عدد الواجهات المخصصة	2
Level of customisation of the interface	Score		مستوى تخصيص واجهة النظام	3
How smooth is the applications' integration is in your company? 1 Not a challenge at all 7 A Great Challenge	The Score		كيف هي سلاسة درجة ارتباط البرامج في الشركة؟ 1 ليس تحديا على الإطلاق 7 تحد كبير	التقييم
Integrating with different clients	Score		ارتباط البرامج السحابية مع العملاء المختلفين	1
Integrating with different vendors	Score		ارتباط البرامج السحابية مع البائعين المختلفين	1
Integrating with third party organisations	Score		ارتباط البرامج السحابية مع شركات طرف ثالث (شركات التامين وغيرها)	1
Integration with other applications in the organisation	Score		ارتباط البرامج السحابية مع التطبيقات الأخرى في الشركة	4
Integration with other devices/technologies in the organisation (For example: running the business via mobile)	Score		ارتباط البرامج السحابية مع الأجهزة / التقنيات الأخرى في الشركة (مثلا: انهاء الاعمال عن طريق الجوال)	3

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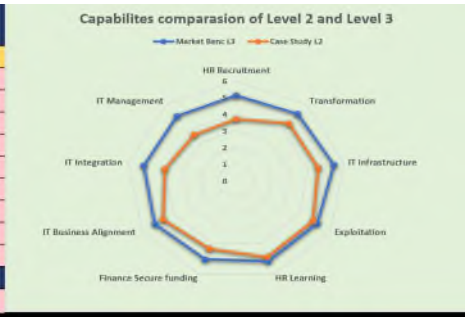
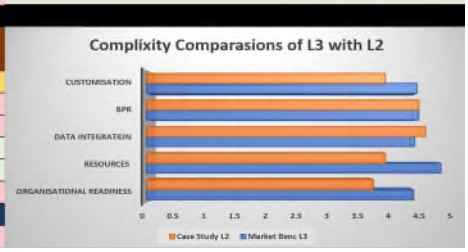
Thank you for your kind Participation

Appendix D: Case Studies (Tool Evaluation Workshop snapshots)

Capabilities requiered to move into Level 3 (Assessment Radar)				
Factors	**Market Benc L3**	**Case Study L2**	**Case Study index**	**Status**
HR Recruitment	5.117424242	3.7	0.723019985	☹
Transformation	5.247474747	4.5	0.857555342	☹
IT Infrastructure	5.444444444	4.564340004	0.838348164	☹
Exploitation	5.136363636	4.86666666	0.947492624	☹
HR Learning	5.136363636	4.9	0.953982301	☹
Finance Secure funding	5.03030303	4.340740741	0.86291834	☹
IT Business Alignment	5.176767677	4.66666666	0.901463413	☹
IT Integration	5.169191919	4	0.77381534	☹
IT Management	5.068181818	3.6	0.710313901	☹
Capab Market AVG:	**5.17**	**Capab AVG:**	**0.00**	
Organisation's Current Situation in terms of Capabilities:			**0%**	☹

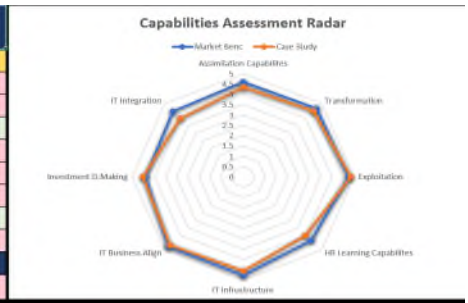


Expected Complexities to face once moved into Level 3 (Assessment Radar)				
Factors	**Market Benc L3**	**Case Study L2**	**Index**	**Status**
Organisational Readiness	4.46870229	3.8	1.175974287	☹
Resources	4.924418605	4.0	1.231104651	☹
Data Integration	4.487022901	4.7	0.961504886	😐
BPR	4.553435115	4.6	0.999534532	😐
Customisation	4.526717557	4.0	1.133370988	☹
Complexi Market AVG:	**4.59**	**Compli AVG:**	**4.20**	
Organisation's Current Situation in terms of Complexities:			**92%**	☹

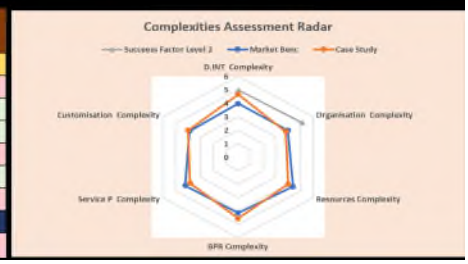


Organisation Complexity				
Factors	**Market Benc**	**Case Study**	**Case Study index**	**STATUS**
Organisation Complexity	3.994029851	3.8	1.051060487	😐
Assimilation	4.590123457	4.340740741	0.945669715	☹
Exploitation	4.77037037	4.86666666	1.020186334	😐
IT infrastructure	4.780246914	4.564340004	0.954833524	☹
Transformation	4.683950617	4.5	0.960727464	☹
IT Integration	4.481481481	4	0.892561983	☹
Market AVG:	**4.66**	**Case AVG:**	**4.45**	
Current Situation of capab required to reduce organisation complxity:			**96%**	☹

Level 2 Capabilities Assessment Radar				
Factors	**Market Benc**	**Case Study**	**Case Study index**	**Status**
Assimilation Capabilites	4.590123457	4.340740741	0.945669715	☹
Transformation	4.683950617	4.5	0.960727464	☹
Exploitation	4.77037037	4.86666666	1.020186334	😐
HR Learning Capabilites	4.340740741	4	0.921501706	☹
IT Infrustructure	4.780246914	4.564340004	0.954833524	☹
IT Business.Align	4.767901235	4.66666666	0.978767477	☹
Investment D.Making	4.382716049	4.51000042	1.029042349	😐
IT Integration	4.481481481	4	0.892561983	☹
Capab Market AVG:	**4.60**	**Capab AVG:**	**4.43**	
Organisation's Current Situation in terms of Capabilities:			**96%**	☹

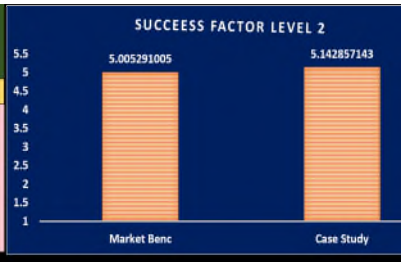


Level 2 Complexities Assessment Radar				
Factors	**Market Benc**	**Case Study**	**Index**	**Status**
D.INT Complexity	3.983703704	4.66666677	0.853650775	☹
Organisation Complexity	3.994029851	3.8	1.051060487	😐
Resources Complexity	4.37962963	4	1.094907407	😐
BPR Complexity	4.13619403	4.555555578	0.907945026	☹
Service P Complexity	4.222014925	3.844444447	1.098211974	😐
Customisation Complexity	3.864427861	3.994029851	0.967551071	☹
Complexi Market AVG:	**4.10**	**Compli AVG:**	**4.14**	
Organisation's Current Situation in terms of Complexities:			**101%**	☹



Level 2 Success Assessment Radar

Factor	Market Benc	Case Study	Case Study index	Status
Succeess Factor Level 2	5.005291005	4	0.799154334	
Organisation's Current Situation in terms of SuccessFaactor:			80%	



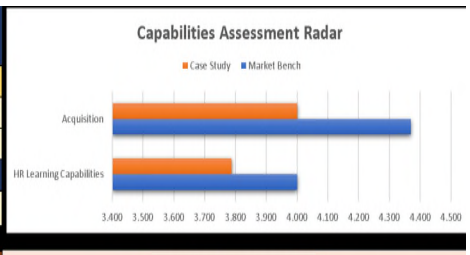
Recommendations

Unfortunatelly your Company did not pass the level of accepted criteria,
Please click on one of the followings to reveal areas for improvment:

Strengths Assessment Radar | Weakness Assessment Radar | Capabilities required to move into Level 2 | Expected Challenges to face once moved into Level 2 | Report Summary

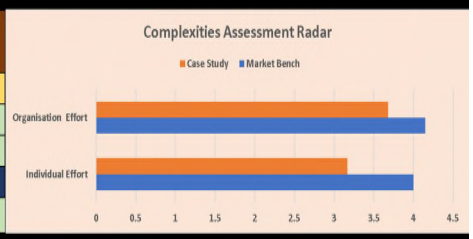
Capabilities Assessment Radar

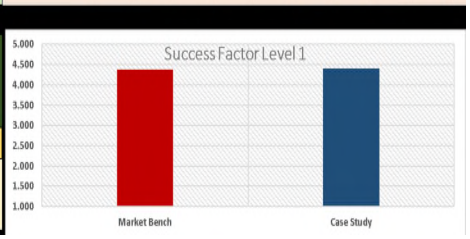
Factors	Market Bench	Case Study	Case Study index	Status
HR Learning Capabilities	4.000	3.788	95%	
Acquisition	4.370	4.000	92%	
Capab Market AVG:	4.19	Capab AVG:	3.89	
Organisation's Current Situation in terms of Capabilities:			93%	



Requirements Assessment Radar

Factors	Market Bench	Case Study	Index	Status
Individual Effort	4	3.166666667	126%	
Organisation Effort	4.15	3.677777778	113%	
Market Efforts AVG:	4.08	Efforts AVG:	3.42	
Organisation's Current Situation in terms of Efforts:			119%	



Success Assessment Radar

Factor	Market Bench	Case Study	Case Study index	Status
Success Factor Level 1	4.383	4.400	100%	
Organisation's Current Situation in terms of SuccessFactors:			100%