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Productisation Business Model in Non-OEM Aero-Engine MRO Service Providers

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Abstract. The combination of product and service to provide customer's satisfaction has been known since 1990s in the aerospace industry, particularly within MRO (Maintenance-Repair-Overhaul) service providers. Initially, the OEMs offered servitisation solutions by bundling the product with services. However, to remain competitive, the non-OEM MRO service providers also initiated bundling its service with products as offerings. This productisation business model is a reverse approach of a servitisation business model. This paper identifies and proposes five types of the productisation business model and each of these types will be shown with a descriptive analysis and illustrations to highlight the understanding of the evolution towards providing offers by bundling services with products. Through this study, non-OEM aero-engine MRO service providers will be able to assess the most suitable business model, based on the MRO service provider's strengths and challenges.

Keywords. productisation, business model, MRO Service Provider.

1. Introduction

In the aviation industry, the business concept has shifted to fulfill the customers' (airlines) requirements with the bundle providing a solution. In particular, the Aero-Engine Manufacturers (OEM) have expanded their business strategy, not only to provide the aero-engine, but also to serve the maintenance and operational requirements. Providing all necessary supporting requirements to support the availability of the aero-engine to the customers was felt to be a solution. In current trends, if the airlines do not possess the aero-engine, they only pay for the utilisation of the aero-engines, on pay per flight hour based contract. This business model converged the product and service and provided a solution to the customers and is referred to as the product-service-system (PSS) [1]. They stated that there are two processes to converge both product and service to PSS. The first method could be approached by adding services to the current product offer, called the servitisation of product. Adding a product to a current service offer is referred to as productisation. In addition, the level of infusion of the product and service to current offers can be measured by its intensity. However, the concept of the productisation in the literature is limited and not yet a stable concept [2]. Therefore, the aim of this paper is to develop an understanding of productisation and also propose several productisation strategy levels in the context of

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the non-OEM aero-engine MRO. To support this research, a literature based survey has been conducted along with semi-structured interview with a non-OEM MRO Service provider in order to extend the understanding and application of the productisation in this area. Much literature considers servitisation as the product integrated service process. However, the term productisation is less considered in the literature.

This paper will consist of several chapters: (1) introduction of the research, (2) the research programme, (3) generation of key findings, (4) analysis of the key findings and (5) concluding remark with future work.

2. Research Program

2.1. Aim, Scope and Research Questions

The aim of this research to develop an understanding of several types of productisation. To achieve the aforementioned aim, this research was conducted by posing several questions: (1) What is productisation?; (2) How non-OEM MRO Service Provider apply productisation?; The purpose of these questions was to guide the search even if the literature might not be sufficient to answer the questions directly as findings.

2.2. Literature Search Strategy

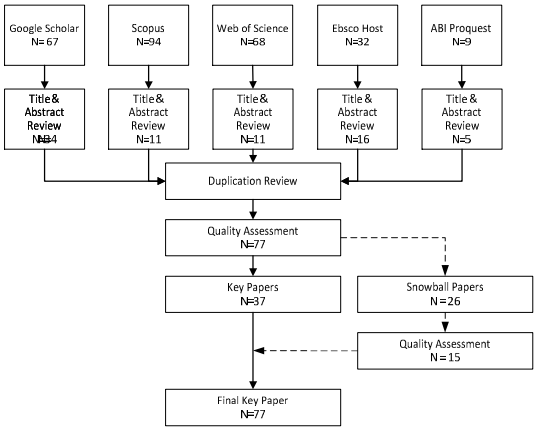


Figure 1 Systematic Literature Review

The search was started by generating several keywords that are associated with PSS and productisation. The research has taken several databases into account such as: Google Scholar, Scopus, Web of Science, EBSCOHost, and ABI ProQuest. Based on the literature review strategy proposed by Denyer et.al., [3], this research has revealed several key papers as mentioned by Figure 1.

From the literature review and in depth review of the key papers, information was obtained regarding the definition of productisation and the methodology of the productisation strategy. The scope of the paper then narrowed down to papers that mentioned definition and the methodology of productisation.

2.3. Semi-structured Interview

To support an enhanced understanding of the productisation application in the industry, an industry case was used as an object of comparison. In this case, the aviation industry seemed to be the closest industry with the PSS application. Since the servitisation has been considered as the main topic in the literature, the scope of this paper is the PSS application in productisation. The semi-structured interview has been chosen as this method provides guidance to the author, but also it also reveals more information outside the planned questions [4].

The case company has been selected with the conception to provide a solution to their customers. The company has evolved its offering from pure maintenance and service to a bundle solution for their customers (airlines). This means, provides both the service and the product to the airlines. The company has also allowed wide access of data and documents to the authors and for these reasons is a suitable object for this research.

3. Generation of key findings

3.1. Productisation in the literature

Most of the literature generalise productisation as servitisation. This because the process to integrate products is less important, than the provision of combined product and services for the customers. However, servitisation should be treated evenly with productisation [5]. The initiation of productisation and servitisation as a concept of evolutionary process in the PSS [6] as productisation is the reverse approach of the servitisation process [1,7–9].

Definitions of productisation have been stated by several authors which relate to the scope of this research. *Productisation relates to the process of analyzing a need, defining and combining suitable elements, tangible and/or intangible, into a product-like defined set of deliverables that is standardised, repeatable and comprehendible* [10]. Leoni commented on the productisation as the *process of transforming a service company offering by adding tangible products to core services or by decomposing service components into combinable modules, with the aim of fulfilling customers' needs and improving service quality and efficiency* [9].

The productisation' motives have been introduced to analyse and assess the customers' needs. Productisation is a process that consist of all the operations to enhance that sale ability of the service [11]. There is also mention of productisation improving an organisation's production process to increase profitability and, thus providing a solution the evolving customers' requirement [12].

Several authors mentioned that productisation application will engage standardisation, systematisation and concretisation of all elements required in the offerings [13–15]. It will force the service to become as product-like (easier as it become tangible), easy to replicate [16] and simpler to visualise [17].

Productisation also incorporates the technological elements [18]. Then, Ukko enhanced the productisation method by incorporating customers benefits in the productisation process [19]. In addition, there is also a need for productisation to incorporate the lifecycle [20]. Then, there also a mention that productisation will add products in order for services to be delivered [21]. Brocke suggested the use of predefined service propositions to change the actual core service agreement [12]. This

would allow customers far more continuous customisability according to the evolving requirement of the customer's business.

In the software industry, productisation advances from standard packaged software products to customer tailored software [13]. The most simple productisation, will enable the firm to provide more replicable services to allow easier replication to different requirements [22]. They discussed that the productisation level will increase as the offers mature with the maturity depending on the level of the intangibility and the outcome of the productisation. The more mature the product/service is the easier the communication becomes. The infusion of the product and the service as a solution has also been considered [8,9,23]. However, they mentioned that the levels of the solution provided will generate new type of offers.

3.2. Non-OEM MRO Service Provider Business Strategy

Based on the information obtained from the semi-structure interview, it has been revealed, that the Non-OEM MRO Service Provider has evolved its business model. They have provided different types of offering to fulfill their customers (airlines) demand to remain competitive. The most conventional business strategy is offering pure maintenance service. Then the offer developed into maintenance package service offerings, and currently the Non-OEM MRO Service Provider has started to provide total solution to their customers. They have offered solution by bundled the current service with the products (i.e. aero-engines).

4. Analysis of key findings

Based on the literature and the interview conducted, the research obtained several findings related to different types of productisation (Fig.2).

Productisation Type I. Pure service (maintenance) offers: The service provider prepares and manages all the required supports to deliver the service to the customers. The internal organization prepared and manage all necessary processes to provide the maintenance service to the airlines.

Productisation Type II. Packaging service offers: The service provider offers services package. The service packages are quantified and measured by total manhours per maintenance package. This situation allows for the maintenance service package offer to be easily replicated and understood. It became more tangible as a package offers.

Productisation Type III. Provide solution (service embedded with product) offers: The total solution integrates both the service and the products to fulfil the customers' requirements. The output of this model leaves the service provider as the total solution provider.

Productisation Type IV. Broker type business model or Dry Lease: a leasing arrangement whereby a lessor (i.e., GECAS) provides an aircraft without crew, ground staff, etc. This model of productisation requires the lessee to put the aircraft on its own operational certification and registration.

Productisation Type V. Wet Lease Business model: a business model where a lessor can provide an aircraft include the air-crew, maintenance guarantee and insurance to lessee or other type of business owner of air travel (usually pays by the hour). The lessee provides all operations requirements (fuel, airport fees, duties, taxes, etc.).

5. Concluding remarks and future work

This research provides and strengthen the productisation concept. To enhance the understanding of the productisation, this paper also places the five types of productisation strategies. The types of productisation then can be identified and proposed in order to help the decision makers to adopt and assess their capability and capacity and select the most suitable productisation type.

In the application of the productisation, there are several challenges in defining or preparing the contract agreement. First, to develop a model that could represent each model of the productisation strategy for the non-OEM MRO, which includes the framework to incorporate customers' demand assessment of the contract and the shop floor capacity and capability. There is a need to decide between the demand and the operational support, particularly in the shop floor operation availability as there is dynamic behavior [24] and lifecycle management [25] that has to be assessed in order to support the productisation strategy more efficiently.

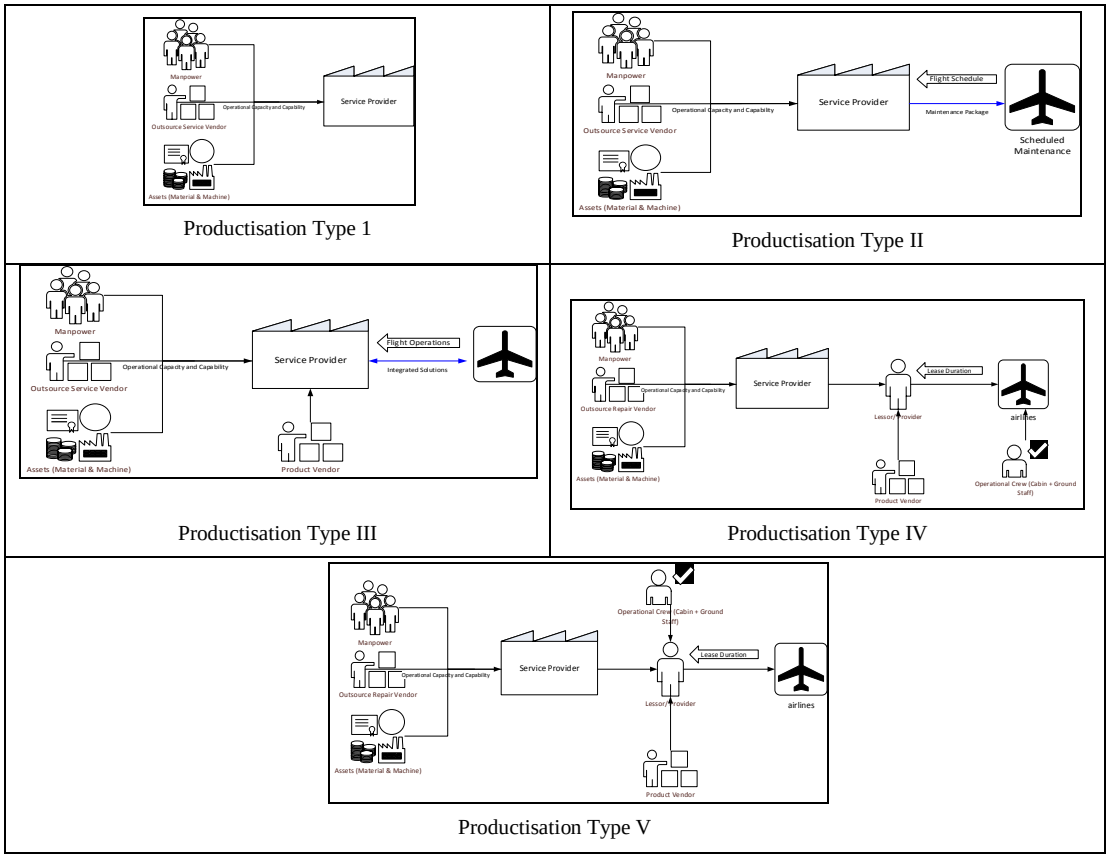


Figure 2 Productisation Types

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