



# Productization of Services as a Growth Strategy for Aircraft MRO Company

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**Abstract.** This paper is intended to contribute directly to recent business aviation undergoing enormous changes, especially with the pandemic-19 and war, as well as rapid technological changes. The purpose of this paper's preliminary survey and review is to analyze and look for alternative strategies for aircraft MRO companies (maintenance, repair, & overhaul) to respond to changing airline demands for 'total care aircraft'. This demand tends to increase and leads to integrated goods and services so that aircraft MRO could respond with an excellent service towards an exceptional airline's operations and maintenance of the aircraft and components. This empirical research used preliminary research to hold companies that manage airlines, aircraft MRO, and providers of aircraft mechanics and other MRO experts. Due to limited research on MRO aircraft, especially those concerning 'total care aircraft', the study combined a literature review on related literature and limited face-to-face interviews. The results are obtained by developing a growth strategy that can be carried out in two ways: concentration and diversification. The MROs provide a total solution to airlines by integrating services and products through the productization of services. MROs are offering maintenance services bundled with the provision of service with products. MROs excel in the maintenance provision, particularly when the product has reached a specific cycle (matured age) work scope.

**Keywords:** Growth strategy · productization of services · Total care aircraft

## 1 Introduction

Integrated product and services through productization of services in aircraft MRO company to become a cutting-edge growth strategy in thriving the business change demands. Growth strategy is one of the orientations of directional strategy [1].

The significant change in the MRO industry, such as competition, aircraft maintenance systems and technology, aviation authorities' regulation, customer demands, aircraft ownership, and decreasing yield from time to time, as well as significant changes in the global environment due to the covid-19 pandemic, that has affected aspects of the MRO industry. Airlines tend to view their purchased product or service from a more holistic perspective. Those situations influence all the strategies and programs for survival and sustainable growth.

During the covid-19 pandemic, the market size of the global industry MRO in 2019 was 87 billion USD, which dropped drastically to 57 billion USD in 2020 and is predicted to be over in 2023 to 97 billion USD [2]. Even though the global market has recovered and improved, the competition among aviation industries, both with the MRO service providers and the OEM (Original Equipment Manufacturer), is getting tougher. The OEMs have entered the MRO industry through forwarding integration, especially in components and engines, with a market size that has attained 67.48% of the total MRO market for 2019–2030 [2].

Based on the literature review conducted by the researcher, there are several gaps (gaps) obtained, both in general and. Firstly, research and discussion that is still very rare and limited, although, in best practice, it has been implemented, especially by the entry of manufacturing companies into the maintenance industry, is regarding Total care aircraft. Secondly, research and other detailed discussions that are relatively rare are research on MRO aircraft supporting products, especially those concerning repair & modification and manufacturing of selected components, and are used as alternative growth strategies.

This preliminary research and review aim to analyze and look for alternative strategies for aircraft MRO companies (maintenance, repair, & overhaul) to respond to changing airline demands which have implications for increasing and leading to integrated goods and services amid an increasing MRO competition and the drastic decline in the global market size of the MRO industry which directly affects MRO companies and the market opportunity for ‘total care aircraft’.

A profitable strategy for growth becomes a critical success factor for MRO service providers in the future. This can be executed by entering the asset management business through productizing their services, manufacturing components, engines, and aircraft parts by DOA (design organization approval) and offering maintenance to establish PSS (product services system). Thus, MRO companies can provide a mind-free solution for the airlines by offering both ‘total care maintenance’ and ‘asset management, or a ‘total care aircraft’ package. This type of service is quantified at an agreed rate per flight hour.

## 2 Methods

This empirical research used preliminary research to hold companies that manage airlines, aircraft MRO, and providers of aircraft mechanics and other MRO experts. Due to limited research on MRO aircraft, especially those concerning ‘total care aircraft’, the references used were a combination of related books, articles, and limited face-to-face interviews [3].

This research focuses more on qualitative data with observations and face-to-face interviews to design, formulate and define alternative growth strategies for MRO aircraft companies, including product scopes that can be developed through the productization of services. To support decision-making for the growth strategy, quantitative data is obtained from internal companies for non-published data, external sources for published data, or secondary data such as annual reports and other sources. Informants or respondents are employees and management (top to line) of the company as well as retirees within the Aviation holding company in Indonesia, especially those related to aircraft maintenance, airline, both legacy and LCC (low-cost carrier), and also the company for labor supply in the aviation business.

### 3 Results and Discussion

The aviation industry, especially the aircraft maintenance, repair, & overhaul ('MRO'), is vulnerable and sensitive to external and internal environmental change. Airline companies require an affordable cost with the intention to promptly have a lower annual yield. Nevertheless, the hi-tech and hi-capital assets service needs to be excellent. This situation has led the aviation communities, such as suppliers, and aircraft MRO, to amend their operations significantly.

There is an opportunity for the MRO service provider to predict the required services and maintenance. The airlines operate their flights by following flight scheduling and routing, which determines where and when flights will depart and arrive. Aircraft operations and CAM (Continuing Airworthiness Management) will determine aircraft maintenance, whether the type is minor or major maintenance, and where, at the outstation, airport, or base/hangar. When major maintenance is performed, or sometimes during minor maintenance, it is necessary to replace aircraft components, such as engine, APU- (auxiliary power unit), components, and aircraft parts, and of course, using materials. Performing aircraft maintenance properly, supported by the availability of serviceable components for replacements, is the main factor in achieving dispatch reliability, availability, safety, and punctuality of a flying aircraft.

Therefore, it is necessary to provide floating spare for components and/or engines to guarantee reliability and punctuality in case of trouble or damage outside the planned or specified schedule. Traditionally, floating spare is owned or prepared by the airline, but recently the airline asked the provider, either MRO or OEM, to provide and maintain it simultaneously. With the development of the product-service system (PSS) in the company's MRO aircraft, certain value creation will occur towards the airline customers' requirements. PSS is an innovative strategy for sustainable development to shift the business focus from physical products to a system of tangible and intangible services to fulfill specific client demands [4, 5].

Therefore, the company can offer a complete package of offers, namely 'total care aircraft' or 'total aircraft support', in which both the work and ownership cost and risk of aircraft flight hours will be quantified based on a fixed rate, agreed multiplied by aircraft flight hours. This is the culmination of the product offered to airlines, which is the development of the transactional relationship between the MRO company and the airline, initially based on TMB (time & material basis). The bill for maintenance services is the sum of total manhours multiplied by manhours rate, material consumption multiplied by material handling fee, and outsourcing or sub-contractor cost multiplied by subcontracting handling fee. Then the more advanced offering is a fixed maintenance package: invoices are based on a fixed price, where both parties determine a fixed price in advance for each job. The invoice does not depend on the manhours or materials consumed but on the work scope.

The third option is the flight hours-based maintenance is paid based on the aircraft's flight hours ('FH') and engines and components, called PBTH (power by the hours). The MRO company will charge the maintenance work with the aircraft's performance, namely FH multiplied by the agreed PBTH rate. In this case, the airline will pay according to the FH used, meaning that the cost of aircraft maintenance and components will be variable in route profitability so that profit and loss calculations can be determined

directly and quickly on each route flown. The value-added process and innovation will increase along with product development toward the total care aircraft offering. The implications for the company's growth strategy, with a more comprehensive work scope than previous, the rapid increment of the bills, and the innovative added value and total and integrated operational support to airlines.

The growth strategy is a corporate-level strategy, which is part of the directional, stability, and retrenchment strategy [1]. This strategy consists of diversification and concentration strategies comprised of vertical and horizontal growth. Vertical growth is to take over functions provided by suppliers/distributors through backward integration and forward integration [6].

In the productization of services, MRO service providers combine with the aircraft maintenance, from the line, base, cabin, component, engine & APU, and engineering services, will produce a complete product or PSS in the form of total care aircraft. Productization of services is the evolution or process of transforming a service company to include a product or add the tangible product to core services marketed to improve service quality and customer needs [5, 6]. In the productization of services, there is a shift from service orientation to product orientation to create value.

Nowadays, the landscape of players in the MRO industry, where several component and engine manufacturing companies have entered the MRO or forward integration business by offering total care aircraft through servitization of product, the MRO company's growth strategy is to enter the supplier or manufacturer business or with backward integration, with productization of services. MRO Service providers should consider the opportunity for their new offerings. Based on the experience and preliminary research on the company PT. GMF AeroAsia, the market leader for aircraft MRO company in Indonesia and is in the top-ranking list in Asia, has implemented productization of services in specific components and cabin parts, as well as the RR RB183 Spey 555 and CFM56-3 engines a few years ago, and manufacture several part number of the component with PMA (part manufacturing approval). The productization of services was implied through the following products: a). The product scope of specific components and cabin components can be relatively produced internally and is still allowed to be carried out by MRO companies based on aviation regulations (DGCA, FAA, and EASA); DGCA: b). The scope of products in best practice has been widely worked on and approved by aviation regulators in the form of PMA (part manufacturing approval); c). Specifically for aircraft engines, an MRO service provider is possible after the engine has entered a declining phase so that the value added of the MRO service provider would become optimal. Through this strategy, the schedule and scope of the product in the engine will only be covered when the machine enters the 'second run' phase (The engine has been repaired/overhauled twice); d). The schedule and scope of the APU (Auxiliary Power Unit) components can still be carried out after the 'first run' (preferably after the second run), considering that components and spare parts are available with aircraft parting, and APU hours vary widely in various airlines; and, e). MRO companies that are relevant to the productization of services are MRO-independent and MRO-airline companies, which have a comprehensive and integrated scope (from line maintenance, base maintenance, component maintenance, cabin maintenance, APU & Engine maintenance, and

engineering services) or specialize in specific components, the APU, the engine, as well as the aircraft cabin.

The growth strategy to enter the supplier or manufacturer business or back-ward integration through the productization of services brings several benefits: a) Increase revenue and growth by taking advantage of aviation industry opportunities; b) Improve and ensure supply availability and price stability; c) Improve the company's (financial) performance in growth and profitability; d) Enhance customer relationships and improve service quality; e). Strengthen the positioning and control of the industry, especially in the value chain, both forward and backward; f) Improve the company's capabilities, both in product scope and resources, where employees work more effectively and try to provide high-quality products.

The implementation of productization of services requires prerequisites to run well, especially supporting resources, analytical methods, and an integrated and systematic process [7]. Wibowo et al. [8] have also mentioned the importance of managing resources and offering to the airline's operational needs. Their approach was to manage the offering by measuring the level of productization spectrum based on the shop floor's capacity and capability [8].

The implementation of productization of services for MRO companies also contains risks and limitations. These risks and limitations, for example, are increased business risks in the industry, particularly those related to the resources, capital, and investment; reduced the company's flexibility because it will depend on the in-house products; the employees' culture often becomes inefficient to carry out in-housework; lastly, it could weaken the employee motivation and value creation capabilities. This situation is impacted due to the specifications and types of products produced, which are still relatively limited in number, and the initial income earned will be lower.

## 4 Conclusion

In conclusion, there is a massive opportunity for MRO growth, but achieving a successful Growth Strategy through the Productization of Services in Aircraft MRO Company, will be possible and need commitment through the best preparation of resources, including human resources, regulation, and managing of pseudo-competition.

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This article was written based on some literature and observation on the productization of services, PSS, and strategic management, as well as a relatively limited preliminary study; therefore, the author proposes further research to complement, enrich, and develop the points of thought in this paper to generate more potential values both in the industry and the academic. This research delivered an in-depth analysis of the areas or products where MRO companies can thrive through the productization of services. Second, this research provided a solution for the industry and the regulators on how to carry out the productization of services, which covers all prerequisites that should be met. And for the business, they could seek an alternative revenue recognition in the Aircraft MRO business for Total care aircraft solutions (including implementation of IFRS 15 or PSAK 72 in Indonesia).

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