DOI: 10.17747/2618-947X-2025-3-262-274

Digital servitisation strategy: Approaches to development and implementation

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Abstract

Digital servitisation is the integration of two innovative approaches that contribute to modern companies' competitive advantage creation: servitisation and digitalisation (digital transformation). The article reveals the essence of these approaches and describes various types of product-service systems (PSS), which are the foundation for forming a service strategy. A comparative analysis of approaches to the typology of servitisation strategies is carried out. The prerequisites and possibilities for the configuration approach in determining successful models of strategic behaviour are shown. The principles of developing a digital servitisation strategy are defined: equifinality, rational choice, relationality, ecosystem and strategic alignment. In accordance with the principle of strategic alignment, a generalised scheme for creating a servitisation strategy in a digital environment (digital servitisation strategy) is proposed, which is based on a coupled assessment and forecasting of current and target service levels and the company's digital maturity. Key areas for assessing the level of a company's servitisation have been highlighted. The possibilities of three types of service strategies for companies at different levels of digital maturity have been shown.

Keywords: service business models, configuration approach, strategic alignment, servitisation maturity model

For citation:

Gileva T.A. (2025). Digital servitisation strategy: Approaches to development and implementation. *Strategic Decisions and Risk Management,* 16(3): 262-274. DOI: 10.17747/2618-947X-2025-3-262-274. (In Russ.)

数字服务化战略：发展和实施的方法

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简介

数字服务化是两种创新方法的整合，有助于创造现代公司的竞争优势-服务化和数字化（数字转型）。本文揭示了这些方法的本质，描述了各种类型的产品服务系统(PSS)。 作为形成服务战略的基础。 对服务化战略类型学方法进行了比较分析，展示了确定战略行为成功模型的配置方法的先决条件和可能性。 定义了数字服务化战略制定的原则为：平等性、理性选择、关系性、生态系统和战略调整。 根据战略调整原则，提出了在数字环境中形成服务化战略（数字服务化战略）的广义方案，该方案基于对公司当前和目标服务水平和数字成熟度的综合评估和预测。确定了公司服务化水平评估的关键领域。 展示了具有不同数字成熟度水平的公司的三种类型服务策略的可能性。

关键词: 服务业务模型、配置方法、战略调整、服务化成熟度模型

引用文本:

Gileva T.A. (2025). 数字服务化战略：发展和实施的方法. 战略决策和风险管理, 16(3): 262–274. DOI: 10.17747/2618-947X-2025-3-262-274. (俄文)

Introduction

One of the first definitions of servitisation is considered to be the definition by S. Vandermerwe and H. Rada. According to this definition, servitisation refers to the expansion of product offerings in the direction of providing more comprehensive market packages (combinations of goods and services) tailored to the needs of customers in order to enhance the value of basic products [Vandermerwe, Rada, 1988]. The emergence and development of the servitisation concept is often seen as a response by industrial companies to changing market conditions. When the possibility of selling industrial products is reduced, and consumer demands for results are increased, this contributes to the growth of service companies [Minaya et al., 2023]. The main advantages of servitisation include increased sales and market share, due to increased customer satisfaction and loyalty, a reduced number of returns or product rejections, the attraction of new customers, a deeper understanding of consumers, their values and expectations, improved company image, and additional impetus for innovation [Tukker, 2015; Kamala et al., 2020; Favoretto et al., 2022; Minaya et al., 2023; 2024]. The work by [Georgievskiy, 2022] identifies the following groups of results that a company can achieve when moving from selling goods to providing 'goods-services': ensuring a strategic advantage, improving the financial condition, increasing organisational efficiency and developing relationships with customers. The positive impact of servitisation on the financial results and long-term financial stability of the company has been noted in works by [Martín-Peña et al., 2020; Dvoyanov, Kelchevskaya, 2021].

The relevance of further research in this area is determined by the following circumstances:

– the presence of certain problems and risks faced by companies that have embarked on the path of servitisation;
– expanding the opportunities of servitisation through the use of digital technologies and forming on this basis the concept of digital servitisation.

The challenges of moving from goods to services are fundamental and involve transforming a company's value proposition and business model. As noted in [Foerster, 2023], such a shift in the value proposition is a complex task, as it involves shifting from unidirectional value delivery to collaborative value creation. Servitisation requires effective coordination between multiple stakeholders, which can lead to conflicts of interest between key stakeholders in a product company's network. [Kohtamaki et al., 2019]. According to research [Kamala et al., 2020], implementing servitisation requires fundamental changes at all levels of the company. These changes include aligning the servitisation strategy with the corporate culture, marketing, and operating model. This also includes the competencies of individual employees, which requires significant resources and time. As a result, the transition to a servitised business model can be challenging. Problems and risks can also arise from: a lack of necessary competencies and capabilities within the company, the need for specialised personnel, high costs of implementing services, prioritisation of sales of products due to higher returns, poor service culture, difficulties in adapting the offer to each client's needs, lack of support from decision makers, resistance to change, and so on [Kohtamaki et al., 2019; Sholihah et al., 2020; Minaya et al., 2023].

Another potential danger is the so-called servitisation paradox, or service paradox, when an emphasis on new services undermines existing production capabilities, or when due to management differences (both at the planning and implementation stages) significant investments in expanding the service business lead to an increase in supply of services and higher costs, but do not generate expected and correspondingly higher profits [Gebauer et al., 2005; Sjödin et al., 2019; Kohtamaki et al., 2020]. While digital technologies offer additional opportunities for servitisation, they can also exacerbate the inherent challenges and contradictions of the process due to the existence of a 'digitalisation paradox.' [Gebauer et al., 2020; Sjödin et al., 2020; Galvani, Bocconcelli, 2022].

The realisation of potential opportunities and minimisation of risks, as follows from theory and practice of digital transformation, is ensured by forming a strategy [Gileva, 2023]. Therefore, the purpose of this article is to systematise approaches and develop recommendations for the formation of a servitisation strategy for companies operating in a digital environment.

1. Development of the concept of digital servitization: A theoretical review

As the analysis shows, there is no clear definition of the concept of servitisation. Moreover, there are several approaches to its essence that are complementary. Since servitisation is associated with changes in the value proposition and aims to create competitive advantages, it is most commonly considered as a strategy or business model. A third approach can be identified, which relates to the understanding of servitisation as a complex transformation process that ensures coordinated change not only in a company's strategy and business model, but also ensures its connection with organisational culture and operational model, acquisition of necessary resources and competencies, including through expansion of ecosystem interactions and joint value creation. Let us give some of the most comprehensive definitions:

– servitisation is a strategic shift in an organisation's capabilities, human and financial resources, and processes to offer comprehensive, integrated services using innovative technologies that add value to products [Kamala et al., 2020]:

– servitisation is a business strategy that focuses on providing services to customers. To do this, a company needs to understand what customers want from their products. This information can then be used to enhance the value of products by offering additional services that support their use and functionality [Minaya et al., 2023];
– servitisation is a transformational process in which a company moves from providing products to providing personalised solutions focused on satisfying customer needs through the creation of results [Georgievskiy, 2022];

These approaches to defining the concept of servitisation are also highlighted in the work [Georgievskiy, 2022], and it is noted that, in the analysed definitions, 'strategy' is the most frequently used specification, which is more than twice as common as the second most common specification 'process'. However, despite frequent mentions of the term 'strategy' in relation to servitisation, most researchers focus on the strategic nature of transformations, while relatively few works are devoted to clarifying typologies of services or service-oriented strategies.

The next aspect that is actively being discussed today is the impact of digital technologies on the development of the concept of servitisation. As noted in [Dolgova, Nikitaeva, 2021; Favoretto et al., 2022], servitisation and digitalisation are two business model innovations that have had a significant impact on product companies. The convergence of these two trends has led to the emergence of a new concept called digital servitisation. Digital servitisation is:

– transformation processes, capabilities, and offerings in industrial firms and their associated ecosystems to progressively create and deliver increased service value arising from a wide range of enabling digital technologies [Sjödin et al., 2020];
– a transformation process, in which a product-based company changes its business model from a product-focused one to a service-oriented one, is enabled by digital technologies. This reconfigures its business processes, capabilities, products and services to enhance customer value and improve the company's non-financial and financial performance [Favoretto et al., 2022];
– generating additional benefits and value for clients through the integration of industry 4.0 technologies into the service process [Minaya et al., 2024];
– the use of digital technologies to create new services and configure a value creation ecosystem consists of various resources and stakeholders, who, together, in an automated or non-automated form, create value and achieve certain results [Rabetino et al., 2024].

Additional benefits of using digital technologies in the context of servitisation include:

– improved personalisation and customer experience - thanks to the ability to collect and analyse large volumes of data;
– increased efficiency and proactivity in service delivery – technologies such as the Internet of Things and artificial intelligence enable remote monitoring and predictive maintenance, preventing problems before they occur and minimising downtime;
– developing new opportunities and business models where customers pay for results rather than the product itself provides greater value for customers;
– improving relationships between customers and suppliers through closer collaboration and joint value creation;
– continuous improvement of products and services based on continuous feedback from customers, monitoring and analysis of results and customer satisfaction [Martín-Peña et al., 2020; Minaya et al., 2023].

A more in-depth analysis of the potential of digital servitisation in comparison to traditional servitisation was conducted in the study by [Favoretto et al., 2022], which identified nine areas of change based on content analysis results (motivation, strategy, service offering, structure, culture, resources and capabilities, processes, performance, and ecosystem interactions), and provided descriptions of their characteristics.

One of the fundamental concepts that reflect the essence and dynamics of the servitisation process is the product-service system (PSS). According to A. Tukker, a PSS is a system consisting of both tangible products and intangible services that are developed and integrated in a way that can jointly satisfy specific customer needs [Tukker, 2004]. According to the PSS (Product-Service System) concept, service is seen not as a useful addition to a physical product, but rather as an integral part of a holistic value proposition [Sholihah et al., 2019].

Today, various types of product-service systems exist, but many are based on the typology proposed by Tukker as part of the continuum from creating tangible to intangible value for users - from a 'pure product' to a 'pure service' [Tukker, 2004]. The first main category of services is product-focused. Although the business model is primarily centered around selling products, some additional services are also offered. This version of servitisation is the most conservative and easiest to implement for traditional, product-focused companies. Within this category, there are two types of PSS: (1) actual services related to the product, such as a maintenance contract, supply of consumables, or a return agreement when the product reaches the end of its life, and (2) advice and consultancy, such as advice on

optimising logistics in a plant where the product is used as a production unit. The second category is usage-based services. In this category, the traditional product still has a central role, but the business model is not focused on selling the product itself. The product remains the property of the supplier, but it is provided in a different format and sometimes shared among multiple users. Within this category, there are several possible options:

– product leasing - the product does not become the customer's property. The supplier retains ownership and is often responsible for maintenance, repairs, and monitoring. The customer pays a regular fee for using the product and typically has unlimited and personalised access to it;
– rental - the product is also owned by the supplier, who is responsible for maintaining, repairing, etc., and receives payment for the use of the product. The main difference between this option and the previous one is that the user will not have unlimited and exclusive access to the product. Instead, the product will be shared among users, meaning that other people can also use it at the same time;
– product pooling - similar in many ways to the previous options, but it involves the simultaneous use of a product by multiple users.

The third category is services that focus on results. This includes:

– activity management (outsourcing) is the transfer of personnel and material costs from the client to the supplier, who makes a profit by more efficiently organising outsourced tasks using specialised knowledge.
– pay-per-use pricing - the basis is a product or service that is in high demand, but users do not purchase the product or service itself, but rather the results it provides. A well-known historical example of this is the sale of photocopies, rather than photocopy machines. In this case, the manufacturer of photocopying machines takes on all the responsibilities necessary to maintain the photocopying function in the workplace, including supplying paper and toner, providing technical support, and repairing or replacing the photocopy machine if needed;
– functional result – the supplier promises to provide a specific benefit to the customer, while having much more freedom in how they deliver it. There is less reliance on a specific product or technology. Examples of this type of PSS include companies that offer a 'pleasant working environment' instead of selling air conditioning units, or companies that guarantee minimal crop losses for farmers instead of selling pesticides.

A more detailed analysis of research on product-service systems is provided in the paper [Barravecchia et al., 2021]. The development of the PSS concept in a digital environment has resulted in the emergence of intelligent product-service systems, or Smart PSS, which combines intelligent, connected products with digital services to provide comprehensive solutions that address customer needs [Barravecchia et al., 2021][1].

In conclusion, two points should be noted. Firstly, there is a close connection between the success of companies' innovative transformations, both in the areas of servitisation and digitalisation, and the presence of a unified strategy for implementing these transformations [Sholihah et al., 2019; Kamala et al., 2020; Gileva, 2023; Minaya et al., 2024]. Secondly, the typology of product-service systems often forms the basis for determining service strategies.

2. Methods and tools for developing and implementing strategies

The methodology and tools of strategic management are well-established, diverse, and constantly evolving. A major driver for development was the increased instability and uncertainty in the external environment, caused by the digital transformation of various aspects of life. At the same time, the methods of analysing the external environment are evolving in a certain direction: the range of factors being analysed is expanding, the importance of weak signal analysis, technological scanning, scenario analysis, and planning is growing, and the scope of industry analysis is broadening, extending far beyond specific industries [Gileva, Shkarupeta, 2022; Titov et al., 2025]. The demands for strategic flexibility are significantly increasing [Gileva, 2023]. A new analysis and management tool has emerged - a digital maturity assessment model [Gileva, 2021]. Initially, models for assessing the maturity of industries and individual companies were developed. Then, this toolkit evolved to include assessing the maturity of entire ecosystems and the service maturity of individual companies [Adrodegari, Saccani, 2020; Kimita et al., 2022]. Business models play a crucial role in implementing strategies, especially in the area of servitisation [Gileva, 2016; Khachaturyan, 2022]. One of the most comprehensive approaches to understanding service business models is presented in the article [Kohtamäki et al., 2019].

At the same time, the logic behind developing both a digital strategy and a servitisation strategy remains largely traditional. This involves analysing the external and internal environment, taking into account the updating and development of strategic analysis methods, integrating the analysis results into a SWOT matrix (necessarily in its full version - with recommended action

[1] See also: Zheng P., Chen C.-Y., Wang Z. (2021). Smart product-service systems. Elsevier Inc. https://www.sciencedirect.com/book/9780323852470/smart-product-service-systems#-book-info.

areas), setting goals, selecting strategies, and developing a trajectory for achieving them at different management levels (corporate, business unit, and functional). Monitoring implementation is also essential, often using the methodology and tools of a balanced scorecard to present and monitor strategy. Adjustments to goals, strategies, and plans are made based on monitoring results. This is the logic for forming a service strategy, with clarifications regarding the structure of a balanced scorecard, that is presented in this work [Sholihah et al., 2020].

However, it is worth noting that, in addition to the traditional approach to strategy development, a so-called configurational approach has gained popularity in recent years. At the same time, like with many scientific and practical approaches and concepts, there are different interpretations and applications of this idea. One of the pioneers of the configuration approach to strategic planning is D. Miller. Based on his analysis, he identified ten strategic archetypes, or models of company behaviour, depending on the dynamics and hostility of the external environment, as well as the heterogeneity of the environment and the company's size. These archetypes include six successful and four unsuccessful models [Miller, Friesen, 1978].

Currently, the development of the configuration approach is largely driven by the increasing instability and uncertainty in the external environment. Situations arise where basic scientific research is unable to provide answers to current management challenges. In such cases, a comprehensive analysis of successful companies' activities becomes essential to identify and systematise effective behavioural models, including different types of strategies. According to the configurational approach, strategic design is presented as a set of options depending on various combinations of factors that influence the success of the transformations being implemented [Greckhamer et al., 2018; Sjödin et al., 2019; Kamala et al., 2020; Soto Setzke et al., 2023; Paiola et al., 2024; Markova, Ovchinnikova, 2025]. However, the results of interest are rarely caused by a single factor, and these factors rarely act independently. Therefore, the same factors can have both positive and negative effects, depending on the other conditions involved. Thus, in the study by [Sjödin et al., 2019], the goal was to identify specific management conditions that lead to the successful implementation of servitisation strategies.

Configurational theory can help explain complex, multi-dimensional phenomena that tend to group together into archetypes or general patterns of consistent causes (e.g., management strategies) [Greckhamer et al., 2018]. An essential principle of the configurational approach is the recognition of the concept of equifinality. This means that different combinations of factors can lead to the same optimal outcome, meaning that there are multiple paths to success [Sjödin et al., 2019].

The approaches considered (traditional and configurational) are not in contradiction, but rather complementary, which will be taken into account and used when developing recommendations for creating a company's servitisation strategy.

3. Servitisation strategies: typology and formation

As mentioned above, the term 'strategic' is often used when discussing the concept of servitisation. However, this is largely due to the nature of the process itself. It creates a wide range of additional competitive advantages, and requires a thorough review and restructuring of the strategic priorities, business models, processes, competencies, capabilities, and organisational culture of the company.

Creating value through servitisation requires a new approach, and the intention to move towards services should be clearly reflected in the company's strategy and changes to its business models [Soto Setzke et al., 2023]. As noted in [Minaya et al., 2024], digital servitisation represents a strategic shift that marks a fundamental turning point in the modern business landscape. This transformation involves not only a shift from a product-focused to a service-focused approach, but also the integration of advanced digital technologies deeply into the company's operations. In addition, servitisation involves collaboration across company boundaries and effective coordination between multiple stakeholders. This means that it not only affects the business models of individual companies, but also requires the alignment of the business models of all partners involved in creating value through PSS. Therefore, the implementation of the concept of digital servitisation is not possible without the creation of ecosystems and the use of digital platforms as their foundation [Kohtamäki et al., 2019; Favoretto et al., 2022; Trachuk, Linder, 2023; Rabetino et al., 2024].

As for the strategies themselves, their understanding generally corresponds to the traditional one. A servitisation strategy is seen as a comprehensive action plan designed to achieve a long-term business goal [Kamala et al., 2020]. In [Sholihah et al., 2020], a service-oriented strategy is described as a coordinated and integrated set of actions and commitments that a company makes in order to leverage its capabilities and achieve its goals, as well as gain a competitive advantage through improved service offerings. It should also be noted that digitalisation leads to a differentiation of services, whether they are product- or customer-focused, mainly due to an increase in customisation options [Favoretto et al., 2022]. Additionally, service strategies, or models

Table 1
Approaches to identifying servitisation strategies

Authors	Types of strategies	Features of the approach
[Kamala et al., 2020]	Five servitisation strategies have been identified: 1) product-focused; 2) integration-focused; 3) user-focused; 4) service-focused; 5) result-oriented	The strategies are identified through a systematic literature review. They are based on Tooke's typology of 'product-service' systems, which positions a company along the 'product-service' continuum.
[Cusumano et al., 2015; Foerster, 2023]	In the work [Cusumano et al., 2015] three strategies were identified, adapted in the work [Foerster, 2023] taking into account the characteristics of ecosystem interactions: – Product flattening strategy: additional services support the functionality of the product, but they are not fully integrated with it. This allows the service to be standardised and offered by the product manufacturer or by an independent service provider; – A product adaptation strategy involves customising a product based on the needs of the users. This enhances the product's functionality and makes it more relevant to the target audience. The service component is closely linked to the product, ensuring a seamless experience for the user; – The product replacement strategy aims to completely replace a product with a service, where customers primarily pay for use	The initial premise for creating the typology is that competitive advantages are created based on a value proposition. Therefore, strategies are differentiated according to the type of value proposition, reflecting the evolution of PSS from products to services. In [Foerster et al., 2023], these strategies are seen as a means for a company to succeed in the ecosystem during the renewal phase.
[Sjödin et al., 2019]	Three alternative management strategies have been identified that allow advanced service providers to maximise the value of their services: 1) Innovation management strategy (high service innovation, low attractiveness of alternatives, and low use of explicit contracts) - firms following this strategy consistently provide innovative service combinations that clearly differentiate them from competitors, without the need for formal contracts to capture the value of innovation. A firm's ability to generate effective service innovation allows them to freely manage their partner network, relying on their ability to innovate and respond quickly. The successful application of this strategy relies on the rapid commercialisation of innovations and a limited level of competition; 2) The relational management strategy, which is characterised by a high level of service innovation, high perceived switching costs, and low use of explicit contracts, is based on the establishment of longer-term relationships with partners and customers that are characterised by trust and openness. Trust replaces explicit contracts as a governance mechanism, allowing for the joint creation of value. This is possible due to the high switching costs associated with the significant interdependence between partners in the process of generating innovative value; 3) Market-based governance strategy - instead of relying on trust, this approach uses contractual mechanisms to manage and extract value from innovation. This strategy emphasises high levels of service innovation, low switching costs, and the attractiveness of alternative options, as well as extensive use of explicit contracts. According to the analysis, this configuration is least common and only works in certain market conditions. For instance, a greater focus on contracts may be suitable when client relationships are new or when there is a high risk of opportunistic behaviour from partners	The study employs a configurational approach that examines the impact of four key factors on company performance: innovation in the service industry, perceived switching costs for customers, the attractiveness of alternative service providers, and the use of explicit contracts. Empirical data from 50 Swedish companies providing advanced services was used to create analytical models and draw conclusions

Table 1 – ending

Authors	Types of strategies	Features of the approach
[Favoretto et al., 2022]	There are three types of digital servitisation strategies: 1) industrial servitisation - when digitalisation enhances the efficiency of a company's operations by allowing the provision of product-related services; 2) commercial servitisation - product companies use digital technologies to provide services that enhance customer processes; 3) a value-based servitisation strategy that combines digitalisation and service offerings to create value for both businesses and customers	The typology of strategies is part of a comprehensive study that analyses the impact of digitalisation on traditional service delivery and is considered one of the areas affected by this change. Another important aspect is the use of digital platforms
[Paiola et al., 2024]	Three equifinal configurations (models of strategic behaviour) have been identified: 1) small and medium-sized businesses with a relatively high level of digital maturity, no significant internal involvement in the project, and a correspondingly small number of new hires related to it. The implementation of local projects that do not require the involvement of the entire company, using existing resources and capabilities, without the need to hire competent specialists from outside; 2) large companies with a relatively high level of digital maturity and high levels of internal collaboration, as well as a small number of targeted hires, are the most common among the companies in the sample we studied; 3) large companies that are not fully prepared for digital transformation but have a high level of internal engagement in digital service projects and employ a large number of external specialists to implement them	The study used a configurational approach to examine the influence of four internal factors on the success of digital servitisation projects: firm size, level of digital readiness, degree of internal involvement, and acquisition of new competencies through external talent acquisition. The focus of this study is on Italian B2B manufacturing companies that are implementing digital servitisation projects in the area of knowledge-intensive business services (KIBS)

Source: compiled by the author.

of strategic behaviour, are increasingly being developed based on a configuration approach (see Table 1).

Based on the results of the analysis, several conclusions can be drawn.

Firstly, regarding approaches to the typology of service strategies.

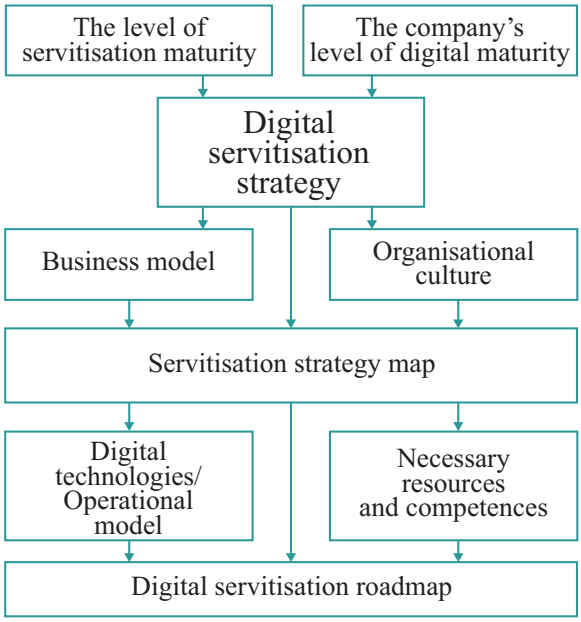
Here, we can broadly distinguish between two options:

– value typology - based on the type of value proposition within the PSS format, this approach is the most common within the 'product-service' continuum [Cusumano et al., 2015; Kamala et al., 2020; Favoretto et al., 2022; Foerster et al., 2023];
– configuration typology - in the form of various combinations of several factors that are key to the success of the service process [Sjödin et al., 2019; Soto Setzke et al., 2023; Paiola et al., 2024].

Secondly, in terms of defining the key principles for creating a servitisation strategy, these principles include:

– the principle of equifinality reflects the idea that strategic goals can be achieved through various means. This means that there are different configurations of key factors that can lead to the same desired result;

Fig. The generalised scheme for the formation of the servitisation strategy for a company in the digital environment



Source: compiled by the author.

Table 2
Key areas for assessing the company's level of servitisation

Directions	Components
Strategy and business-model	Value proposition in PSS format, digital products and services Having a clear servitisation strategy Alignment of business models with the strategy of a service-oriented company Metrics (KPIs) that reflect the process and outcomes of servitisation, such as the share of revenue or profit generated from providing services within the company's overall revenue/ profit, customer satisfaction levels, and return on investment in the service segment, among others
Processes and technologies	Ability to analyse the consumer and determine their requirements in order to formulate a value proposition that is tailored to the specific needs of the company Capability to deliver a value proposition that meets the needs of the business and is specifically tailored to the operations of the company Standardisation of processes and services to ensure consistent quality and high levels of service Service-oriented information technologies, including online marketing and analytics, customer-focused CRM systems, customer support systems, chatbots, omnichannel service support, the use of virtual and augmented reality technologies in customer services, and so on Cybersecurity Risk management
Resources and competences	Availability of necessary resources and competencies within the company (assessed taking into account the specifics of the services and the company) Allocation of resources between product- and service-oriented departments and projects Senior management support for servitisation investments Knowledge management in the company, including: - collection and accumulation of knowledge about clients necessary for expanding the range and improving the quality of services; - collection and accumulation of data on partners' goals, resources, competencies and reliability, etc.
Partners and ecosystem	Number and reliability of existing partners Availability of potential partners The nature of relationships with partners (contractual or relational – based on trust) Degree of dependence on ecosystem partners Participation of clients and other stakeholders in the development/creation of services
Personnel and oraganisational culture	Service-focused appraisal and motivation system Employee engagement drives customer-focused growth Customer service culture Leadership and talent management Motivating employees to learn and collaborate

Source: compiled by the author.

Table 3
Features of servitisation strategies based on a company's digital maturity

Company's level of digital maturity	Product smoothing strategy (Product-oriented services)	Product adaptation strategy (Usage-driven services)	Product substitution strategy (Results-based services)
Low	Additional services that do not involve significant use of digital technologies are offered in addition to basic (material) products	Product sharing services are implemented using minimal digital technology	Providing the final result as a service with minimal digitalisation
Basic	The ability to monitor the quality and efficiency of product-service use is added to the product-service offering	The use of digital technologies can help reduce the time and cost of maintenance. This is because digital platforms offer a range of benefits, including the ability to attract and evaluate potential partners and clients more efficiently	Improving customer experience and efficiency through data analysis
Advanced	The share of digital products and services is growing, and the opportunities for customisation and scaling are significantly expanding	Developing our own digital platform, growing our customer base and increasing satisfaction levels by providing more customised services	Continuously improving our services in collaboration with our partners and clients, we are developing an ecosystem based on a digital platform

Source: compiled by the author.

– the principle of rational choice emphasises the need to justify both the selection of key success factors and the choice of a strategic behaviour model;
– the principle of relationality presupposes the need for the existence, consideration, and formation of a system of non-hierarchical relationships based on coordination of interests and trust between companies involved in creating an integrated value proposition in PSS format;
– the ecosystem principle describes the inter-company nature of the process of creating PSS and emphasises the importance of combining resources and skills in the process of jointly creating innovative value;
– the principle of strategic alignment reflects the need to align the chosen strategy with a set of business models, organisational structure, operating model, and corporate culture.

As mentioned earlier, the shift from a product-centric approach to a PSS-based value proposition involves significant changes not only to products, processes, technologies, and resources but also to the overall business model, management structure, and organisational culture. The need for strategic alignment between all aspects of a company's operations is identified by [Sholihah et al., 2019] as a crucial issue, without which it is impossible to successfully transition to a service-oriented business model. The principle of strategic alignment should be considered already at the planning stage, but its success is largely dependent on the process of implementing the strategy. Currently, the most common approach to addressing issues of strategy implementation, monitoring and evaluation is the balanced scorecard (hereinafter referred to as BSC). The features of creating a strategic map in the BSC format, considering the characteristics of the service process,

are discussed in theworks by [Rabetino et al., 2017; Sholihah et al., 2020].

A servitisation maturity model is a valuable tool for developing a service strategy and addressing alignment issues. Various approaches to creating such models have been described in the literature [Adrodegari, Saccani, 2020; Kimita et al., 2022; Arioli et al., 2025]. Additional tools that can be used in the creation of servitisation models and the development of a strategic plan for the service strategy include PSS mapping tools, such as the PSS Board [Barravecchia et al., 2021].

A comprehensive diagram of the process of developing a service strategy for a digital business (digital servitisation strategy) is shown in Fig. 1. The diagram does not illustrate the stages of strategic analysis that lead up to the justification of the feasibility of transitioning to a service-oriented development model. General guidelines for conducting such analysis can be found in the literature [Sholihah et al., 2020; Gileva, Shkarupeta, 2022]. In this process of analysis, it is important to identify key success factors, which are a limited number of areas (internal or external conditions) that, if achieved, guarantee success in the competition. These factors are essential for the successful implementation of a strategy. For companies with a high level of digital maturity, it is recommended to analyse and identify these factors using big data analysis and artificial intelligence technologies. These factors can serve as parameters for creating successful configurations. For example, by focusing on them in maturity models and defining corresponding target values, as the choice of a digital servitisation strategy is largely determined by the balance between the servitisation maturity level and the company's digital maturity level (see Figure).

Today, a wide range of models for evaluating the digital maturity of businesses have been created [Gileva, 2021]. A generalised description of the key areas for assessing the level of service-orientation is presented in Table 2.

A servitisation strategy is chosen based on the current level of service maturity and its potential for growth. As can be seen from the analysis presented in Table 1, the most common and logical approach is to choose the appropriate position along the 'product-service' continuum. The basic guidelines are the PSS categories identified by Tukker and described above: (1) product-oriented services, (2) usage-oriented services and (3) result-oriented services [Tukker, 2004]. Additional recommendations for selecting the type of PSS are contained in the work by [Frederiksen et al., 2021]. Considering the different levels of digital maturity, the capabilities of each identified strategy may vary (Table 3).

Like strategies, service business models are closely related to the type of PSS. Therefore, it is essential to identify business models that align with the chosen strategy. Alternatively, from the perspective of the service content, business models such as product supplier, industrialiser, solution provider, results provider, and platform provider could be used [Kohtamäki et al., 2019]. From the perspective of the format for providing IT services in the context of digital servitisation, we can consider the XaaS family of business models.

The issues of creating a service-oriented organisational culture are important, but they are beyond the scope of this study.

The logic of creating a strategic map allows us to expand the requirements for a PSS into a system of processes, technologies, resources, and competencies needed to create a company's operating model. This, in turn, leads to the development of a roadmap as a tool to implement the chosen strategy.

Conclusion

As numerous theoretical and empirical studies have shown, the transition of product-based companies to the provision of both products and services, known as servitisation, can lead to the creation of significant competitive advantages. The development of digital technologies presents a vast array of opportunities in this field, while also increasing the complexity of an already intricate process. To successfully overcome the challenges of servitisation and digitalisation, companies need to develop a clear strategy that aligns with other key components of their business, including their operating model, technologies, and organisational culture. This requires a comprehensive approach that takes into account the skills and expertise required to implement change.

The proposed framework for developing a company's service-oriented strategy in a digital environment provides an overall logical approach to the process. It includes additional guidelines for managers, such as a typology of service strategies that take into account different levels of digital maturity in companies, as well as key areas to assess a company's level of service orientation.

Since both servitisation and digital servitisation involve the collaboration of various companies, as well as customers, in the development of integrated products and services, it is important to understand the characteristics of ecosystems that enable the creation of result-oriented services. This area of research aims to analyse the formation, operation, and evolution of these ecosystems.

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The article was submitted on 20.06.2025; revised on 12.07.2025 and accepted for publication on 15.07.2025. The author read and approved the final version of the manuscript.

文章于 20.06.2025 提交给编辑。文章于 12.07.2025 已审稿。之后于 15.07.2025 接受发表。作者已经阅读并批准了手稿的最终版本。