

Digital Transformation and Servitization: The Keys to Unlocking Business Success in the Digital Age

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Abstract

Purpose – Emphasized that digital technology has a role in services across industries beyond manufacturing, including retail, banking, and the Internet of Things.

Methodology – This study uses a combination of bibliometric analysis methodology and systematic literature review (SLR), to provide an inclusive view of the digital transformation that enable servitization in various industries.

Findings – Organizations greatly profit when digital servitization plans are implemented successfully. First off, it increases revenue streams by expanding beyond just product sales as a source of money. Companies can tap into more income sources and attain better financial stability by providing complementary services and solutions. Second, by taking into account customers changing requirements and preferences, digital servitization raises customer happiness. Organizations may increase client loyalty, encourage repeat business, and build favorable brand perception by offering personalized and integrated services.

Research limitations – The specific strategies, benefits, and disadvantages of digital servitization can vary depending on factors such as industry dynamics, company size, market conditions, and the successful execution of transformation initiatives. Organizations need to carefully assess their unique circumstances and tailor their digital servitization strategies accordingly to maximize the benefits and mitigate potential challenges.

Practical implications – IoT, cloud computing, and data analytics are examples of digital technologies that businesses can adopt to optimize service delivery, boost operational effectiveness, and acquire insightful data on customer behavior. As a result, they are in a position to dominate their market and beat off rivals in the age of digital technology.

Introduction

Technological development and the internet have brought significant changes in the business world, especially in the digital economy. The digital economy is an economic aspect based on utilizing and empowering digital information and communication technology (Wahyuningtias et al., 2021). Tapscott first introduced the concept of the digital economy in 1998, which stated

that the digital economy is a social phenomenon that affects the economic system, where this phenomenon has the characteristics of an intellectual space, including information, various access to information instruments, information capacity, and information processing (Egnatoff, 1998). The digital economy encourages changes in the mindset of individuals and organizations in making economic decisions. Companies will offer their services according to specific requests or special offers; offers have been characterized as personal and individual or private offers (Bloch et al., 1996). Innovation is necessary to remain competitive during the rapid development of the digital economy. Innovation can help companies create better products or services, develop more efficient production processes, and strengthen their position in the market (Reguia, 2014). Innovation is critical to survival as traditional industry boundaries blur, and new players disrupt established markets. Digital transformation and certification are essential strategies for innovation and creating new value propositions in the face of the development of the digital economy.

Digital transformation can help organizations adapt to changes in the business environment and gain a better competitive advantage. On the other hand, manufacturers adopt servitization as a business strategy to meet unique consumer needs, achieving a sustainable competitive advantage (Khanra et al., 2021; Raddats et al., 2019; Vandermerwe & Rada, 1988). The customer experience is more important than ever, and servitization can increase engagement and loyalty by offering personalized value-added services. By implementing new technologies, companies can improve their efficiency, effectiveness, and service and expand their market shares (Barton & Kraus, 1985). Digital transformation involves adopting new technologies and developing new business models to create value for customers. In contrast, servitization consists in shifting from a product-centric to a service-centric business model to increase customer engagement and loyalty. Digital transformation and certification can bring many benefits, including increased revenue, profitability, and customer satisfaction (Nadella, 2015). Digital transformation and servitization are two things that are closely related because servitization has always involved technologies that shape its strategies, processes, and structures (Rabetino et al., 2018). By implementing digital technology in a company, it will have a significant impact on advancing servitization, namely by enabling sophisticated and new service offerings (Grubic, 2018; Lerch & Gotsch, 2015).

Nowadays many companies are in the early stages of digital transformation and servitization and lack guidance on implementing these strategies effectively (Ismail et al., 2017). Previous research conducted by Paschou et al. (2020) aimed to characterize the phenomenon of 'digital servitization' by examining how the literature describes the convergence between servitization and digital technologies as well as to identify areas for future research developments. The research provides results from the available scientific literature that revealed limited but rapidly growing coverage of the phenomenon by scientific studies, which have mainly focused on the role of a few digital technologies (above all, the Internet of Things), studied in isolation (Paschou et al., 2020). Subsequent research conducted by Chirumalla and Oghazi in 2023 which identifying the required dynamic capabilities and related microfoundations to facilitate the transition from "traditional" servitization to digital servitization. The research resulted in a framework of dynamic capabilities to enable digital servitization, providing 22 micro-foundations for servitization and digital servitization, as well as the key challenges and enablers related to the transition from one to the other. The two

previous studies that have been conducted of them focus on the process of implementing the transformation from servitization to digital servitization (Chirumalla et al., 2023).

While everyone agrees that digital transformation is critical to the success of all modern enterprises, no one claims that transformation in servitization is simple. Digital transformation is multifaceted, complex, and filled with challenges that can make the head of even the most experienced businessperson spin. Hence, it is necessary to formulate how the company's strategy that align with company expectations to achieve digital servitization. With a clear strategy, it will be easier for companies to determine which decisions to take and achieve the desired goals. By formulating a strategy beforehand, we can ensure that implementation will run effectively and efficiently because the strategy will provide clear guidelines for actions. Therefore, this research will answer the following questions:

1. How does digital transformation enable different service categories?
2. What models or frameworks support digital transformation in servitization decision-making strategies?
3. What are the benefits (and disadvantages) of adopting digital servitization?

This study uses a combination of bibliometric analysis methodology and systematic literature review (SLR), to provide an inclusive view of the digital transformation that enable servitization in various industries.

The remainder of the article is organized as follows: Section 2 discuss the review studies and conceptual background of digital transformation and servitization. Section 3 explains the research methodology adopted in this study. Section 4 discusses the result from bibliometric and content analysis of digital transformation in servitization. Finally, Section 5 concludes the paper by considering the study's implications for theory and practice, limitations, and suggesting avenues for further research.

Literature Review

From product only to Product service system (servitization)

Companies continually strive to increase production, but in recent years, the effects of this effort have demonstrated that providing products alone is insufficient in terms of remaining competitive (Min Yu et al., 2008). Thus, companies have begun to offer solutions aimed at increasing market share as well as customer satisfaction (Sundin, 2009). One method of doing this is to include services with the products through alternatives product uses, a solution known as a product-service system or servitization (Beuren et al., 2013). A servitization can be defined as a business innovation strategy offering a marketable mix of products and services jointly capable of fulfilling a client's needs and/or wants – with higher added value and a smaller environmental impact as compared to an existing system or product (Manzini et al., 2001). A major element of a servitization is that a consumer's need is met by selling utility instead of providing a product. In essence the right of product ownership is shifted from a client to the producer or service provider.

Product-service systems or servitization as a conscious business strategy of shifting from designing and selling physical products to selling of an integrated mix of products and services, recognizes the importance of co-creation and innovation in co-creating effective solution through collaboration between firms and customers (Arul Oli & Dhanasekaran, 2022). By engaging customers in the design, development, and delivery of solutions, firms can create more innovative and effective solutions that meet customer needs more precisely. This co-creation

approach can lead to more significant benefits for both firms and customers, including increased customer satisfaction and loyalty.

Trend related to digital transformation in servitization

The trend of digital transformation in servitization is becoming increasingly important in today's business environment. Recent research by (Gao et al., 2023) highlights the growing interest in the digitalization of servitization, as companies move beyond tangible product offerings to provide integrated and customer-centric solutions. This trend is supported by (Chirumalla et al., 2023) research which explores the role of digitalization in creating value for customers and firms through the co-creation of innovative solutions. The trend is also evident with (Favoretto et al., 2022) which emphasizes the need for businesses to adopt a service-dominant logic approach that emphasizes the provision of services that complement and enhance the value of products. Finally, research by (Schiavone et al., 2022) highlights the importance of leveraging digital technologies such as IoT and data analytics to create more personalized and seamless service experiences tailored to individual customers. These articles cover a range of industries, research methods, and perspectives, providing valuable insights into the role of digitalization in servitization and the opportunities and challenges that arise from this transformation. This topic is crucial to understanding the opportunities and challenges associated with this trend and developing strategies to leverage digital technologies to enhance service offerings and create a competitive advantage in the market.

Review of digital transformation in servitization

The digital transformation of servitization has brought about new opportunities. To better understand this transformation, numerous studies have been conducted, covering a range of industries, research methods, perspectives, providing valuable insights into the role of digitalization in servitization that arise from this transformation.

Table 1. Previous Research related to digital transformation in servitization

Title	Purpose of Literature	Research Method	Number of Primary Studies	Years included
<i>Moving from servitization to digital servitization: Identifying the required dynamic capabilities and related micro foundations to facilitate the transition</i> (Chirumalla et al., 2023)	identify and compare the dynamic capabilities needed to facilitate a transition from “traditional” servitization to digital servitization	SLR	24	2009-2021
<i>Moving toward autonomous solutions: Exploring the spatial and temporal dimensions of business ecosystems</i> (Frandsen et al., 2022)	<ul style="list-style-type: none"> examine how change toward digital servitization is unfolding in the offshore wind industry provide valuable insights into how practitioners may develop advanced digital solutions in their ecosystem to expand expertise networks and foster closer collaboration 	In dept case study reviews	54	2015-2020
<i>Ecosystem transformation for digital servitization: A</i>	investigate how manufacturing firms	SLR	112	2005-2021

<i>systematic review, integrative framework, and future research agenda</i> (Kolagar et al., 2022)	engaged in digital servitization transform their ecosystem			
<i>Digital servitization in manufacturing: A systematic literature review and research agenda</i> (Paschou et al., 2020)	aims to characterize the phenomenon of 'digital servitization' by examining how the literature describes the convergence between servitization and digital technologies as well as to identify areas for future research developments	SLR	84	2000-2018
<i>Digital Transformation and Servitization: The Keys to Unlocking Business Success in the Digital Age</i>	provide an inclusive view of the digital transformation that enable servitization in various industries	SLR	71	2016-2023

Several studies have been conducted to investigate the relationship between digitalization and servitization in different industries. One such study from 2023, titled "The role of digitalization in servitization: A systematic literature review and future research agenda," provides a comprehensive review of existing literature on this topic. It emphasizes the importance of digital transformation in helping businesses achieve their servitization goals. By incorporating digital technologies into their service offerings, companies can enhance customer experiences, generate new revenue streams, and improve operational efficiency. Another study from 2023, "Digitalization and the transition to servitization: The impact of organizational capabilities and culture," focuses on the influence of organizational capabilities and culture on the successful adoption of a service-based business model. While digitalization is crucial for enabling servitization, this research acknowledges the significance of fostering a supportive organizational culture and developing appropriate capabilities. These factors contribute to the effective implementation of digital technologies and the transformation of business processes to support service provision.

In 2022, a study titled "Digital transformation and servitization in B2B firms: A review and research agenda" highlights the interconnectedness of digital transformation and servitization in the context of business-to-business (B2B) companies. It emphasizes the need for organizations to consider both aspects simultaneously to achieve their strategic objectives. Leveraging digital technologies empowers B2B firms to enhance their service offerings, strengthen customer relationships, and drive growth and competitiveness within their markets. Another study from 2022, "The impact of digitalization on servitization in manufacturing firms," specifically focuses on the manufacturing sector. It demonstrates the positive influence of digitalization on servitization by enabling manufacturing firms to provide more customized and value-added services. By adopting technologies like the Internet of Things (IoT), data analytics, and cloud computing, manufacturing firms can transcend traditional product-centric approaches and enhance their overall service capabilities.

Lastly, the study "Servitization in the digital age: A review and future research agenda" (2022) explores the opportunities and challenges associated with servitization in the digital era. It highlights the importance of organizations developing the necessary capabilities to succeed in this transformative process. The digital age presents novel avenues for service delivery and customer engagement, necessitating adaptations in business models, operations, and customer

interactions. The research recommends further investigation into key areas related to servitization in the digital era.

Research Methods

This section will explain the Systematic Literature Review used in the study. Referring to the PRISMA Flow Diagram presented in Figure 1, there are 3 stages of review process that should be done, including: 1) searching; 2) screening; 3) analyzing. Each stage explained as follows:

Defining the search term

A search string is developed by considering several studies on digital transformation and servitization, such as those by (Chirumalla et al., 2023; Paschou et al., 2020). Regarding keywords, it uses various alternatives of “digital transformation and servitization strategies” from the servitization literature. “Digital transformation” was replaced by either “digitalization” or “digitization”, it is reasoned that transformation in digital often has the same meaning as “digitalization” and “digitization” which indicates the process of converting analog information into digital format (transform information from its physical form into digital data), and it will broaden term. “Product-service system”, “integrated solution” and “service transformation/infusion” are used interchangeably with “servitization”. For the concept of "strategy", the alternative is "strategies" or “strategic”.

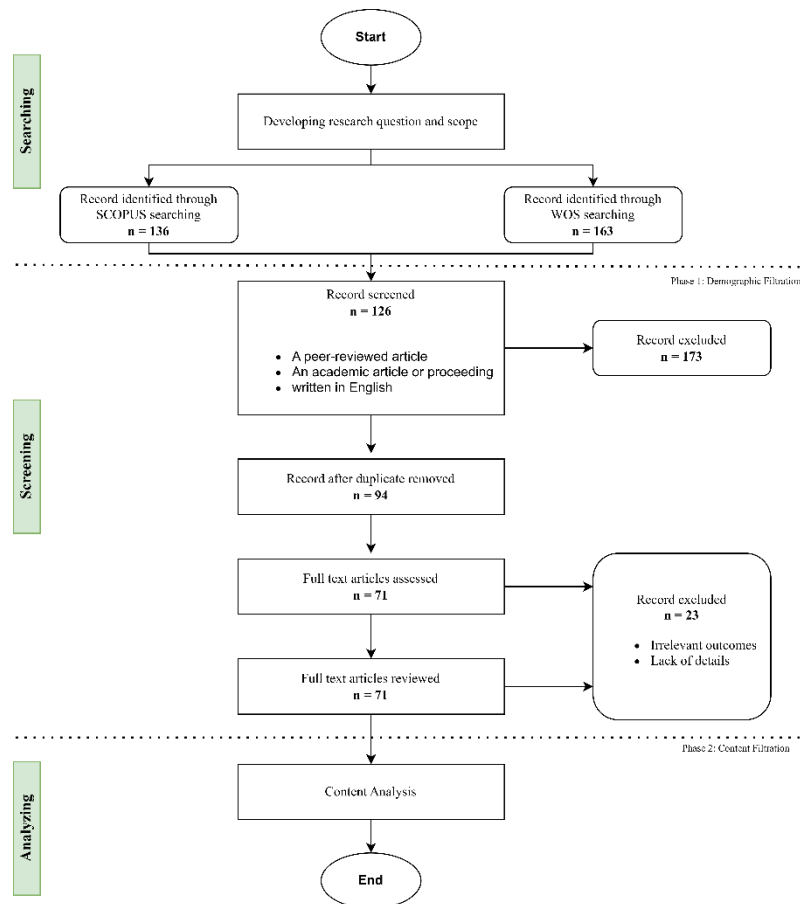
Table 2. Digital Transformation, Servitization, and Strategy Keyword Search

Topic	String
Digital Transformation	(“digital transformation” OR “digitalization” OR “digitization”)
Servitization	((“servitization”) OR (“servitisation”) OR (“product-service system*”) OR (“product service system*”) OR (“PSS”) OR (“integrated solution*”) OR (“service transformation*”) OR (“service infusion”) OR (“digit* serviti*”) OR (“digit* product-service system*”) OR (“digit* product service system*”) OR (“digit* PSS”) OR (“digit* integrated solution*”) OR (“digit* service transformation”) OR (“digit* service infusion”))
Strategy	(“strategies” OR “strategy” OR “strategic”)
	Full String (“digital transformation” OR “digitalization” OR “digitization”) AND ((“servitization”) OR (“servitisation”) OR (“product-service system*”) OR (“product service system*”) OR (“PSS”) OR (“integrated solution*”) OR (“service transformation*”) OR (“service infusion”) OR (“digit* serviti*”) OR (“digit* product-service system*”) OR (“digit* product service system*”) OR (“digit* PSS”) OR (“digit* integrated solution*”) OR (“digit* service transformation”) OR (“digit* service infusion”)) AND (“strategies” OR “strategy” OR “strategic”)

Search protocol and screening process

Our initial search runs on Scopus and Web of Science with the defined search string. Searching the abstract, title and keyword fields produced 299 articles. We then follow four steps to identify the most relevant studies for the final review. In the first step, documents screen using Scopus and WOS filters, including subject categories, document type and English language, which resulted in 126 articles. Most of the 173 articles that were eliminated were published outside the subject area of business, management, and accounting. These articles are related in the category of computer science because of the keyword "digital information". The second factors are they were eliminated because it is not a final article or conference paper. After filtering for Scopus dan WOS, we removing the duplicate articles and resulted in 94 articles. Next, in the

third step, titles, keywords, and abstract is screened manually. Articles that do not explicitly discuss digital serviti-transformation and its strategies is excluded. This process resulted in 71 documents and to be included in the content review. Figure 1 summarizes the search strategy and data retrieval process.



Study method and analyzing

This research uses a combination of SLR and bibliometric analysis. Bibliometric analysis is fundamentally concerned with the quantitative and statistical analysis of a set of connected documents using several bibliometric indicators that offer an overall summary of a research area. While, a structured SLR sticks to a strict scientific design based on clear, prespecified and reproducible methods (Sureka et al., 2022). Following (Kolagar et al., 2022), then a three-stage process is developed for this study:

- *Stage 1 Material collection (Searching)*
The material to be collected is defined and delimited.
- *Stage 2 Category selection (Screening)*
Define inclusion and exclusion in general aspects, ex, publication year, research type, etc., and specific aspects of the material to be assessed are selected.
- *Stage 3 Material classification and evaluation (Analyzing)*

The material is analyzed according to the categories defined in stage 2.

Data Collection

Data collection was obtained by distributing questionnaires offline or face to face. After conducting the pilot test, the researcher distributed offline questionnaires in the form of a

Google form and distributed them at turnover meetings (Open Plan Presentation and Home Prospect Akbar) and learning meetings (New Member Training, New Leader Training, Home Sharing Akbar). The questionnaires distributed were accompanied by a brief explanation of the research, the identity of the researcher, and the link to the questionnaire used. When distributing questionnaires, researchers can use other attributes such as posters regarding the content of the research and the required characteristics of the respondents.

Data Processing and Analysis Techniques

Data processing was carried out after the results of the questionnaires that had been filled out by the respondents were collected. These data are then tabulated based on variables so as to facilitate the process of data analysis (Izam, 2016). In processing this data, there are several stages that are passed, namely descriptive analysis and PLS-SEM (Partial Least Square-Structural Equation Modeling) analysis.

Results and Discussion

Bibliometric Analysis

The results in Figure 2 can describe the data used.



Figure 2. Main Information Data

In this study, data was collected from 2016 to 2023 and came from 43 sources. There are a total of 71 documents that are the object of research. In that period, the data shows an annual growth rate of 29.17%, which means that the number of documents used increases by 29.17% annually. This study's average age of documents was 2.2 years, while the average citation per document was 30.32. There are 1893 references used in this study. In addition, the data also includes information about the keywords specified by the author of 251 in the document. There were 207 authors involved in this study, with five documents written by one author individually. This study also shows author collaboration, with an average of 3.42 authors collaborating on each document. The percentage of international author collaboration is 19.72%. The preliminary information in Figure 2 can provide views on research trends, author characteristics, and the type and age of documents used in this research.

Publication Trend

Publication trend analyses changes and patterns in scientific publications in a particular field or topic over a specified period. Figure 3 below shows the results of publication trends related to Digital Transformation and Servitization during the period 2016 to 2023 from the 71 documents that have been collected.



Figure. 3 Trends of Publication

Figure 3 shows that the publication trend tends to increase every year. In 2023 it does show a downward trend; this is natural because 2023 is still running today. The detailed table regarding the number of publications in each year is presented in Table 3 below.

No	Year	Publications
1	2023	6
2	2022	24
3	2021	16
4	2020	9
5	2019	9
6	2018	2
7	2017	3
8	2016	1

Table 3 shows that the most publications made were in 2022, as many as 24, while the least were in 2016, as many as 1. Based on Figure 3 and Table 3, it can be said that research on Digital Transformation and Servitization has not been carried out much.

Trend Topics and Co-word analysis of high-frequency keywords

Trend topics in this bibliometric research can identify the popularity of Digital Transformation and Servitization in scientific literature. Table 4 shows the results of the topic trends used in this study.

Topic	frequency
servitization	22
digitization	14
innovation	14
strategy	11
service	8
product-service systems	7
industry 4.0	7

In Table 4, the trending topics related to Digital Transformation and Servitization research are servitization followed by digitization and innovation. This shows that servitization is the most frequently listed topic of all the documents collected and used in this research. This indicates that the documents used follow the direction of this bibliometric research. In addition, the results of trend topics show that servitization is the most popular topic to be discussed.

Concerning trend topic analysis and considering that keywords are natural language vocabulary to convey the subject matter and concentrated literature concepts, keyword analysis

citations. This analysis helps understand the influence and attention each publication receives locally and globally.

Table 6. Local and Global Citations

Author	Year	Local Citations	Global Citations
KOHTAMAKI M, 2019, J BUS RES	2019	10	227
KOHTAMAKI M, 2021, J BUS RES	2021	3	24
PAGOROPOULOS A, 2017, J CLEAN PROD	2017	2	40
KRISTOFFERSEN E, 2020, J BUS RES	2020	1	142
KAMALALDIN A, 2021, TECHNOVATION	2021	1	22
CIASULLO MV, 2021, J BUS IND MARK	2021	1	18
KOLAGAR M, 2022, J SERV MANAGE	2022	1	10
HOLGADO M, 2016, IFAC-PAPERSONLINE	2016	0	10
LENKA S, 2017, PSYCHOL MARK	2017	0	244
VENDRELL-HERRERO F, 2017, IND MARK MANAGE	2017	0	349

Table 6 shows that researcher M. Kohtamaki has two relevant publications in the journal J Bus Res in 2019 and 2021, with 10 and 3 local citations and 227 and 24 global citations, respectively. This shows that the research has received sufficient attention in the academic community from both local and global levels. In addition, several other publications accept mixed local and global citations. For example, research by A. Pagoropoulos in the journal J Clean Prod in 2017 received two local and 40 global citations. Meanwhile, research by E. Kristoffersen in the journal J Bus Res in 2020 received only one local citation but 142 global citations.

Countries Production Analysis

In this sub-chapter, an analysis is carried out to track and compare the production of a country or several countries in a certain period. This analysis examines production changes from year to year to understand trends and patterns in the production activities of a particular country or group of countries. In this sub-chapter, countries with the highest total production are analyzed.

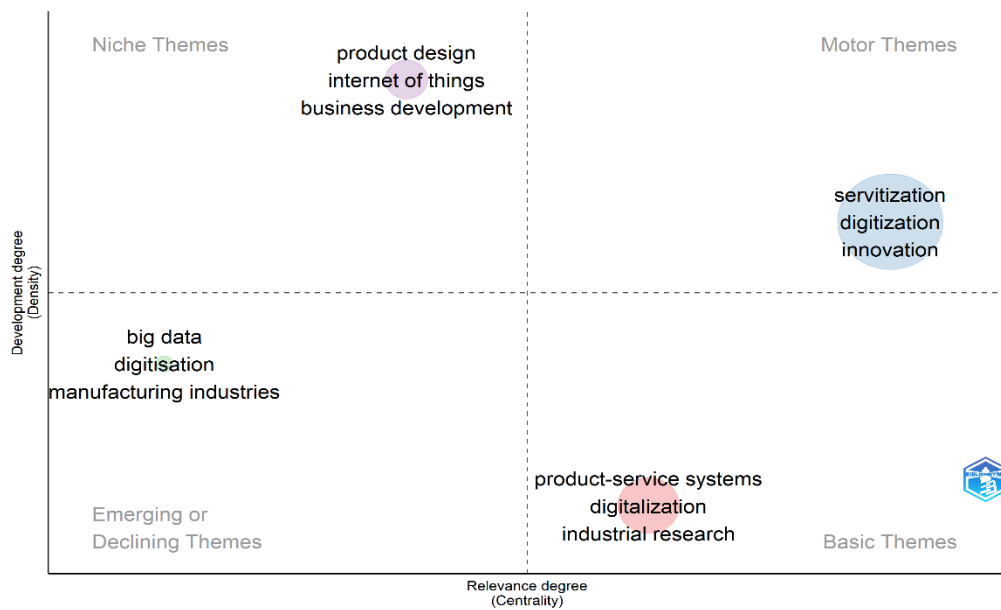
Table 7. Countries Production

Country	Year	Articles
SWEDEN	2023	27
SWEDEN	2022	26
SWEDEN	2021	24
SWEDEN	2020	17
FINLAND	2022	16
FINLAND	2023	16
GERMANY	2022	15
GERMANY	2023	15
ITALY	2022	13
ITALY	2023	13

Table 7 shows that in the most recent period, Sweden showed a steady trend in producing scientific articles. In 2023, Sweden published 27 articles, which shows steady growth compared to previous years. In 2022 there will be 26 published articles, and in 2021, the number will be 24. Although Sweden's article production in 2020 was slightly reduced to 17, it still shows a significant production level.

Meanwhile, Finland also shows stable production of articles. In 2022 and 2023, the country published 16 articles each. Although data for previous years are not available in this table, the relatively consistent production indicates continued interest in research activity in Finland. Germany and Italy also made significant contributions to the production of scientific articles. In 2022 and 2023, these two countries published 15 and 13 articles, respectively. Although data for previous years are not available in this table, the relatively high production in these two countries indicates their active research and contribution to driving the development of science.

Thematic maps analysis



The analysis of the thematic maps of digital information and servitization highlights several changes in the key themes across the investigated periods. Some themes grow in relevance, while others appear as distinctly niche theme as reflected in **Figure 4**. Digital innovation and servitization are the most relevant themes that grow rapidly. Product design and internet of things appear as niche theme in product development. While others are absorbed into more relevant themes and somehow increasingly vanish, such as the research of product service systems and digitization in manufacturing industries.

How does digital transformation enable different service categories?

As illustrated in the thematic maps, at the beginning of its appearance, servitization was very popular, especially in the manufacturing industry. Enterprises can benefit from increased productivity when digital solutions and services are developed (Kharlamov & Parry, 2021). Examples of concrete evidence are the use of big data. Research from Song et al. (2022) stated that servitization of the furniture industry itself has no significant impact on technological progress, but has some impact on the promotion of technical efficiency. Servitization does not develop the type of technology used, but with the presence of big data, companies are able to achieve efficiency by maximizing output using available input.

Along with the massive research on the topic of product service systems, servitization has developed not only in the manufacturing industry. Research from Ingemarsdotter et al. (2020)

used a food retail company as a case study, and found evidence that the internet of things or IoT could enable to more accurately measure the actual performance of lighting systems and support performance-based service contracts, potentially supporting service-oriented business models, which it helps the company to develop and provide new database services in addition to lighting functions over time. Although the basic concept of servitization is the transformation of products into service and product packages, servitization can also be applied in the banking industry, which is a service sector. Minority investments and product-related collaborations are the two most common alliance types for digital strategy. Hornuf et al., (2021) suggested that having a strategic focus on digitalization increases the probability of forming an alliance with a fintech by 6% to 8%. Thus, in its development, servitization or product service systems do not only focus on the manufacturing industry. In fact, through digital transformation innovation drove servitization into a wider sector.

The framework supports digital servitization

Sofic et al. (2022) investigated smart manufacturing, resilient manufacturing, digital servitization, and financial performance to create manufacturing ecosystem as shown in the **Figure 5**. They highlighted the practical implications of interviews conducted with three groups of manufacturing firms. These interviews identified the main differences between successful and unsuccessful firms, providing valuable insights for production managers to shape their business models towards smart and resilient manufacturing ecosystem. To achieve this, manufacturing firms should focus on two perspectives. Firstly, they need to develop a digitalization strategy as a foundation for successful transformation. Secondly, they should enhance the awareness and knowledge of digital technologies and services among their employees, particularly production managers. Moreover, digital technologies and product-related services is crucial for long-term effects. The study showcases that additive manufacturing/3D printing, big data analytics, digital twins, spare parts, pay-per-use, and full-service contracts positively impact a firm's performance.

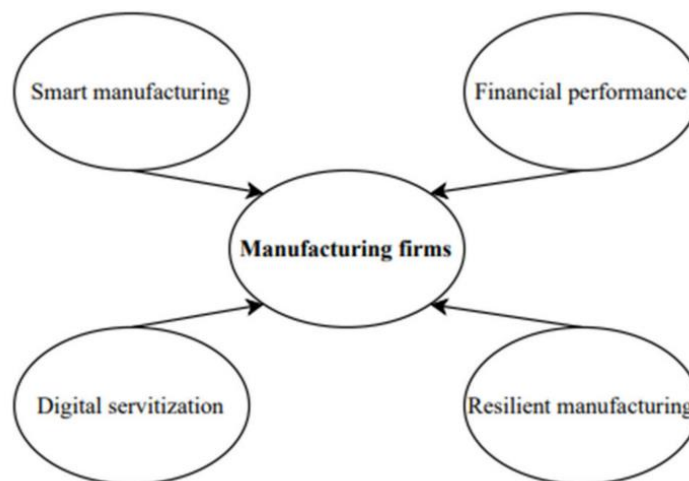


Figure 5. The Conceptual Framework (Sofic et al., 2022)

Second framework proposed by Vendrell-Herrero et al. who did some investigation recently in 2023. They conceptualized how the rise of digitalization and service business models in industry has transformed a special category of innovation-driven manufacturing companies, called treble innovation companies. Using strategic ambivalence, a resource-based perspective, and the interplay of digital servitization, they argue that organizations are characterized by simultaneously developing three types of innovation: process, product, and digital service.

From the model (**Figure 6**), treble innovation firms epitomize the new norm (rather than the exception), representing 21.7% of all Spanish manufacturing firms. Second, product leadership and breadth of innovation make it more likely that dual innovations companies will implement digital service innovations. Finally, treble innovation firms can enhance profit advantage by adopting resource retrenchment and value migration practices.

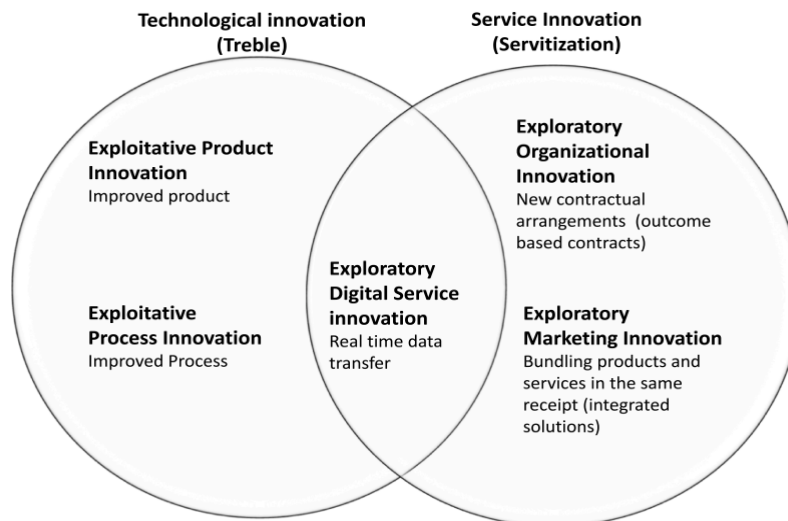


Figure 6. The role of digital servitization innovation (ADDIN CSL_CITATION {"citationItems":[{"id":"ITEM-

The benefit and diadvatage of digital servitization

Digital servitization refers to the transformation of a product-centric business model into a service-oriented model with the integration of digital technologies. This approach offers several benefits and disadvantages.

Benefits of Digital Servitization

Digital servitization enables companies to offer enhanced customer experiences and value by providing additional services and personalized solutions tailored to individual customer needs through internet on things (Ingemarsdotter et al., 2020; Kim, 2021; Takenaka et al., 2022). Firms can also benefit by expanding into service offerings by joining alliances with others (Čirjevskis, 2022). With this action, companies can generate additional revenue streams, reducing reliance solely on product sales and potentially increasing overall profitability (Kharlamov & Parry, 2021). When companies offer services alongside products, it can foster stronger customer loyalty (Kolagar et al., 2022), as it establishes ongoing relationships and opportunities for upselling or cross-selling. Through the utilization of digital technologies, companies can gather valuable data on customer behavior, product usage, and performance, enabling them to gain insights for further innovation and service improvements. Embracing digital servitization also allows companies to differentiate themselves in the market by providing comprehensive solutions and creating long-term relationships with customers to maintain strategic competitive advantage.

Disadvantages of Digital Servitization

Shifting towards a service-oriented model requires significant organizational changes and adjustments, including new processes, skills, and mindset. This transformation may pose challenges and resistance within the company. When companies want to implementing digital

servitization, they often require substantial investments in technology infrastructure, workforce training, and service delivery capabilities, which can strain resources, particularly for small and medium-sized enterprises (Michalik et al., 2019; Le-Dain et al., 2023). As companies transition from product-centric to service-oriented models, ensuring consistent service quality and reliability becomes critical. Meeting customer expectations in terms of service delivery, response times, and problem resolution can be challenging and require dedicated efforts (Feliciano-Cestero et al., 2023). Hence, some customers may prefer traditional product-based transactions and be resistant to embracing service-oriented offerings. Companies need to educate and convince customers about the value and benefits of digital servitization to drive adoption.

Managerial Implication

Organizations must embrace digital transformation and servitization to enhance competitiveness, drive innovation, and improve customer experiences. Managers must stay updated on the latest trends and developments through monitoring scholarly publications, attending conferences, and engaging with academic communities. Fostering collaboration and knowledge sharing within and outside organizations is crucial for successful implementation. Managers should encourage collaboration with external stakeholders, such as academic institutions and industry associations, to exchange ideas, best practices, and innovative solutions.

Investing in digital capabilities is essential for successful implementation, as it helps build technological infrastructure, develop digital skills, and cultivate a digital mindset. Prioritizing training and upskilling programs ensures employees are equipped with the knowledge and capabilities to leverage digital technologies effectively. Proactively addressing challenges, such as organizational changes, resource investments, and skill acquisition, is essential. Managers should develop change management strategies, allocate resources, and foster a culture of continuous learning and adaptation to overcome these obstacles.

Finally, managers should explore cross-industry insights and best practices. The applicability of digital transformation and servitization extends beyond manufacturing, with sectors like retail and banking also embracing these concepts. By learning from successful implementations in other sectors, managers can identify innovative approaches and strategies that can be adapted to their specific industry context, leading to enhanced effectiveness of digital transformation and servitization initiatives.

Conclusion

With the help of digital servitization, businesses may move beyond the constraints of conventional product-centric business models and adopt service-oriented strategies that open up fresh opportunities for expansion and distinction. Value-added services and digital technologies can be used by enterprises to improve client experiences, forge lasting bonds, and provide sustainable competitive advantage. Organizations greatly profit when digital servitization plans are implemented successfully. First off, it increases revenue streams by expanding beyond just product sales as a source of money. Companies can tap into more income sources and attain better financial stability by providing complementary services and solutions. Second, by taking into account customers' changing requirements and preferences, digital servitization raises customer happiness. Organizations may increase client loyalty, encourage

repeat business, and build favorable brand perception by offering personalized and integrated services. Digital servitization enables businesses to establish a leading position in sector innovation. IoT, cloud computing, and data analytics are examples of digital technologies that businesses can adopt to optimize service delivery, boost operational effectiveness, and acquire insightful data on customer behavior. As a result, they are in a position to dominate their market and beat off rivals in the age of digital technology.

Limitations

The specific strategies, benefits, and disadvantages of digital servitization can vary depending on factors such as industry dynamics, company size, market conditions, and the successful execution of transformation initiatives. Organizations need to carefully assess their unique circumstances and tailor their digital servitization strategies accordingly to maximize the benefits and mitigate potential challenges.

Future Research

Future research in digital servitization should focus on in-depth studies on the implementation process, challenges faced, best practices, and critical success factors. It is essential to explore the impact of digital servitization on different industry sectors and their value chains. Additionally, research should investigate the role of emerging technologies like artificial intelligence and blockchain in enabling and optimizing digital servitization. These technologies can enhance service offerings, streamline operations, and foster collaboration between stakeholders, contributing to the advancement of digital servitization. In conclusion, digital servitization holds immense promise as a transformative strategy for organizations.

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