

From Digitization to Transformation: Conceptual Foundations and Strategic Approaches for Service-Oriented Organizations

Radu Adrian MĂRINCEAN¹
Emil Lucian CRIȘAN²

Abstract

Despite its ubiquity in management discourse, digital transformation (DT) remains one of the least precisely defined concepts in the field. This paper addresses two interrelated gaps: the lack of definitional clarity distinguishing DT from the related but narrower concepts of digitization and digitalization, and the insufficient theorization of how service-oriented businesses (SOBs) respond to DT strategically. Drawing on a narrative literature review, the paper first traces the conceptual progression from digitization through digitalization to full digital transformation, establishing a working definition anchored in fundamental, technology-enabled change to an organization's value proposition. It then examines how SOBs adopt exploitative and explorative knowledge management strategies in response to DT pressures, and presents organizational ambidexterity as a framework for reconciling incremental optimization with radical innovation. The paper contributes a synthesized conceptual foundation suited to guiding both future empirical research and managerial practice in service-intensive contexts.

Keywords: digital transformation, digitalization, digitization, service-oriented businesses, exploitative strategies, explorative strategies, organizational ambidexterity

JEL classification: M20, O14, O30

DOI: 10.24818/RMCI.2026.2.234

1. Introduction

The advancement of digital technologies is taking place at unprecedented speed reshaping traditional business models (BMs) within all industries (Hartl and Hess, 2017). The umbrella-term under which these developments occur is digital transformation (DT). Without clear conceptualization of what DT actually is, we risk contributing to the existing hype and buzzword, using the term inconsistently and ultimately losing the core idea (Gong and Ribiere, 2021). Establishing a solid and

¹ Radu Adrian Maricean, „1 Decembrie 1918” University, Faculty of Law and Social Sciences, 5 Gabriel Bethlen Street, RO-510009 Alba-Iulia, Romania

² Emil Lucian Crișan, Babes-Bolyai University, Faculty of Economics and Business Administration, 58-60 Teodor Mihali Street, RO-400591, Cluj-Napoca, Romania

unambiguous understanding of what DT truly entails has proven to be a challenging endeavor. The hype around the DT concept stems from the growing interest in both academic and practitioners' fields, particularly in recent years, for management and organizational research (Appio et al., 2021; Hanelt et al., 2021). The boundaries of DT remain unclear, with existing explanations encompassing a broad spectrum of business contexts, digital technologies (Hanelt et al., 2021) and digital processes like digitization or digitalization. These last two concepts are routinely used as substitutes for DT or used as similar terms with real consequences for organizational planning. Nonetheless, digitization and digitalization are prerequisites sequences towards the broader DT phenomenon (Verhoef et al., 2021).

To face DT, organizations must employ radical changes, and rethink their BMs, along with organizational elements such as structures, processes, and culture (Grover et al., 2022). Organizational transformation towards adopting and integrating digital technologies is a prerequisite for those that want to keep delivering value and meet the increasing customer demands. One way to start with these changes is by adopting digitization and digitalization. Digitization is referred to transposing analogue processes into digital information whilst, digitalization means integrating software systems that communicate and exchange solely digital data in an automated manner (Verhoef et al., 2021). In this regard human interaction is reduced and the use of digital technology is maximized (Davidovski, 2018).

As new digital processes are embedded, they reshape the way organizations interact with data (Šimberová et al., 2022). The rapid proliferation of smart devices connected to the Internet is a key driver of DT and a feature of digitalization, reshaping markets by offering fast and cost-effective solutions. Additionally, digital-native professionals increasingly expect a highly digitalized work environment, as they are already familiar with various devices and applications. Together, these factors contribute to the emergence of Industry 4.0, also known as the Fourth Industrial Revolution (Corso et al., 2018; Ghobakhloo, 2020; Lepore et al., 2020).

While DT affects all sectors, its implications are not uniform across organizational types. Service-oriented businesses face DT pressures that differ structurally: their value creation is intangible, knowledge-intensive, and deeply reliant on human interaction (Pappas et al., 2018). For these organizations, DT cannot be reduced to automating existing processes; it requires rethinking how value is created and delivered. This makes the definitional and strategic questions examined in this paper especially consequential for service-oriented organizations.

2. The Conceptual Ladder: From Digitization to Digital Transformation

2.1 Why Definitions Matter in Digital Transformation Research

A weak emphasis on clear and formal conceptual definitions often results in confusion, ambiguity, and vague interpretations of key concepts. According to Wacker, (2004) a definition is a verbal expression of a concept and a good definition

is a “concise, clear verbal expression of a unique concept that can be used for strict empirical testing”, hence definitions must be carefully designed to clearly represent abstract concepts. The interchangeable use of DT, digitalization, and digitization in the literature has led to what Gong and Ribiere, (2021) describe as a propagated confusion, because the terms, although interconnected, need to be viewed separately from a conceptual point of view.

2.2 Digitization: The Conversion of Analogue to Digital

Much of the literature on DT concerns the adoption of technology, and the DT paradigm emerged only later (Crişan and Stanca, 2021). The concepts used to denote technology adoption and DT overlap and are used interchangeably by different authors. Digitization is the transformation of analog information and encoding it into digital forms (Bode et al., 2022; Davidovski, 2018) or from paper to digital. Digitization means the transformation of processes into digital or virtual forms (from “snail” mail to e-mail, completely virtualized or digitized processes in business) (Crişan and Stanca, 2021).

Digitization does not, by itself, alter the business process or organizational logic in which the information is used; it merely changes the medium. A hospital that scans patient charts into electronic files has digitized its records, but if clinical workflows, decision-making, and patient interactions remain unchanged, no broader transformation has occurred. Digitization is therefore a necessary but not sufficient precondition for the higher-order concepts of digitalization and DT examined in the following subsections.

2.3 Digital Transformation: Fundamental Change Enabled by Digital Technologies

The term *digital* refers to digital technologies, which are defined as the integration of information, computing, communication, and technology. Examples of such digital technologies or digital properties are: mobile, social media, Big Data, IoT, Artificial Intelligence, 3D printers, drones, cloud computing, blockchain, machine learning etc. An umbrella-term for a part of these digital properties is SMACIT technologies, standing for: social, mobile, analytics, cloud and IoT (Hanelt et al., 2021). The integration of digital technologies into products is one of the key drivers of DT. Since 1990, consumer digital technologies have become ubiquitous, permeating nearly every aspect of daily life and fundamentally reshaping how products are designed, used, and experienced (Hess et al., 2016). Digital technologies are inherently innovative, fundamentally altering both the process of innovation and the types of products and services that can be developed (Bogers et al., 2022);

For something to be called *transformation* it must satisfy the condition of the three “Bs”: Big, Bold and Better (in terms of outcomes). Transformation is a different concept than change; while any transformation is a change, not every

change is a transformation (Gong and Ribiere, 2021; Kraus et al., 2021). It represents a dramatic type of change with implications in the very BMs and organization's future.

Deriving from the above-defined terms, we deduct that DT must have at least the following attributes: firstly, it must employ an array of digital technologies, and secondly, it does this to drastically change existing processes, products or services that constitute the core business: a fundamental change powered by digital technologies or IT.

The previous efforts of defining DT are valuable, but to establish as much clarity as possible for our research purposes, and to differentiate different concepts, we chose the definition of DT provided by Gong and Ribiere, (2021) as "a fundamental change process, enabled by the innovative use of digital technologies accompanied by the strategic leverage of key resources and capabilities, aiming to radically improve an entity (an organization, a business network, an industry, or society) and redefine its value proposition for its stakeholders." From our perspective the definitions' key words are: *fundamental change*, *digital technologies* and *radically improve*.

The distinction between digitalization and DT is not merely semantic. For SOBs, where value creation is intangible, knowledge-intensive, and deeply reliant on human interaction, misclassifying a digitalization initiative as a DT might lead to misaligned expectations, underestimated resource requirements, and inappropriate KPIs. The conceptual precision established above is therefore a prerequisite for the strategic choices examined in the remainder of the paper. Having established the conceptual progression from digitization to digital transformation, we now turn to the organizational context in which these distinctions carry the greatest strategic weight: the SOBs.

3. Service-Oriented Organizations in the Digital Era

3.1 Defining the Service-Oriented Organization

DT has become a vital component of modern businesses, particularly in the service industry (Pappas et al., 2018). Services play a significant role in global trade and serve as a major source of employment in both developed and emerging economies (Felzensztein et al., 2022). A service-oriented approach leverages technology to adapt to changing conditions effectively. By adopting this mindset, organizations can develop modular, accessible, and interoperable web services, allowing them to redesign and optimize business processes through the integration and reuse of existing web services (Plugge et al., 2020).

Service orientation has been conceptualized at the organizational level, focusing on how much an organization prioritizes and integrates service-oriented principles within its operations and culture. It is defined as "an organization-wide commitment to a fundamental set of enduring policies, practices, and procedures designed to support and reward service-giving behaviors that create and deliver

service excellence” (Plugge et al., 2020). A service-oriented strategy refers to an organization’s deliberate decision to shape its business strategy around clear choices regarding how business services are structured and facilitated internally (Plugge et al., 2020).

3.2 The Distinctive DT Challenge for Service-Oriented Organizations

SOBs face unique challenges and opportunities in the digital era compared to hard industries (Matt et al., 2015). Unlike manufacturing businesses, which primarily handle tangible products (Lerch and Gotsch, 2015), SOBs, such as management consulting for example, deal with intangible services and rely heavily on customer interactions (Grönroos, 1991). Therefore, implementing DT in SOBs requires a distinct approach compared to manufacturing (Pappas et al., 2018). To fully capitalize on digital technologies, SOBs must carefully evaluate, redesign, and potentially change their BMs (Teece, 2010).

To succeed as a service provider, Ho et al., (2011) argue that organizations must adopt a disruptive approach. This involves building capabilities and knowledge based on emerging trends and technologies. Acquiring new know-how reshapes the BM according to the value generated by the disruptive approach. BM innovation occurs when multiple traditional aspects of a firm need to be revised and reshaped into a new business logic. DT is one such transformation, triggering BM innovation through its holistic scope (Christensen et al., 2013; Tavoletti et al., 2021). The literature refers to this as digitalization-led BMI, which goes beyond simply implementing new software (Bouwman et al., 2019). Digitalization-led BMI has the power to redefine a firm’s core business logic, impacting all departments and transforming not just the way business is conducted but also the underlying mindset (Christensen et al., 2013; Tavoletti et al., 2021). Understanding what makes service-oriented organizations distinctive in the digital era raises a practical question: what strategic approaches are available to these organizations as they navigate the pressures of digital transformation?

4. Strategic Approaches: From Exploitation to Ambidexterity

Organizations must focus on refining their BMs to fully capitalize on technological opportunities and prevent disruption. As Paiola et al., (2024) noted, “a mediocre technology within a strong BM can be more valuable than a great technology within a weak BM.” There are two conflicting schools of thought on BMI: incremental innovation versus radical or disruptive innovation (Paiola et al., 2024).

To prevent neglecting areas of the organization that need digitalization, (Hess et al., 2016) developed a DT Framework (DTF) that outlines four key prerequisites for adopting DT: 1) the use of technologies, reflecting an organization’s capacity to explore and exploit new digital technologies; 2) changes in value creation, which highlights the impact of DT on the organization’s value creation; 3)

structural changes, referring to necessary modifications in organizational structures, processes, skills, and culture to cope with and exploit new technologies; and 4) balancing the financial aspects of a DT endeavor.

4.1 The Exploitation–Exploration Duo

DT forces organizations to navigate a fundamental tension between two competing logics. The exploitative logic prioritizes efficiency, stability, and incremental improvement of existing processes through the standardization and codification of accumulated knowledge. The explorative logic, by contrast, privileges innovation, risk-taking, and radical change through the generation of new knowledge and the adoption of emerging technologies. These two logics require different knowledge management processes, different organizational structures, and different time horizons (Andriopoulos and W. Lewis, 2008; Benner and Tushman, 2003). It is not either approach individually, but the tension between them, that organizations must learn to manage. The following subsections examine each logic in turn before presenting ambidexterity as the theoretical resolution.

4.2 Exploitative Strategies: Incremental DT and Knowledge Standardization

Chen et al., (2021) identify two layers of knowledge: **explorative practices**, which arise from new problems that the organization encounters, and **exploitative practices**, which leverage already accumulated knowledge from previous client experiences. Exploitative practices are often associated with repetitive tasks. This observation aligns with Deelmann's, (2018) research, which suggests that automation could find fertile ground in these exploitative practices. These tasks, categorized as “economically profitable automated tasks”, are prime candidates for automation. Chen et al., (2021) recommend that exploitative tasks should be the first to be integrated with Information and Communication Technology (ICT) tools. Exploitative tasks involve “explicit knowledge” that can be easily structured, codified, and archived. In other words, these tasks can be standardized, or “commoditized.” This involves organizing and making data easily accessible, thereby transforming exploitative tasks into more junior or entry-level roles.

Exploitative and explorative approaches to DT have been discussed in the literature since the late 1970s. Research on process management theory may offer valuable insights into these exploitative and explorative tactics, providing a solid knowledge foundation and opportunities to introduce automation in relevant areas (Benner and Tushman, 2003). According to Benner and Tushman (2003), firms that effectively manage both the internalization of routine activities and innovative practices are more likely to succeed in the long term. The study suggests that successful firms can incorporate routine tasks while also developing new skills and abilities. These firms balance incremental knowledge with openness to radical

change, despite the two requiring different knowledge management processes (Andriopoulos and W. Lewis, 2008).

Benner and Tushman, (2003) suggest that process management scholars often advocate for an incremental approach to improving a technological trajectory rather than opting for radical, exploratory paths. The exploitative approach fits this framework, as it builds on existing knowledge, with small steps taken to standardize and optimize established processes and tasks. The incremental approach offers a key benefit: it ensures that the standardization or virtualization of a niche technology remains manageable for the firm, preventing inefficiency or overextension. This gradual approach allows the company to maintain control over the amount of innovation or standardization, aligned with its internalization capabilities, the capacity to absorb or process radical technological changes within its process management. However, over-reliance on exploitative practices leads to stagnation in creativity, making the organization less adaptable to new technologies, markets, and clients.

4.3 Explorative Strategies: Radical DT and Knowledge Generation

The dynamic process of actively seeking new knowledge within companies has been defined by Kane and Alavi, (2015) as “organizational learning.” Their research emphasizes that organization’s most valuable asset, beyond their knowledge, is their ability to research, generate, retain, and share new knowledge internally (Bennett and Levinthal, 2017; Kane and Alavi, 2015, 2007). Knowledge gathering and dissemination can be viewed as part of the virtualization or initial stages of digitalization (Tavoletti et al., 2021). The integration of IT tools to better store and manage knowledge internally does not conflict with either explorative or exploitative approaches. In fact, IT-enabled learning tools can enhance both (Kane and Alavi, 2007).

The adoption of IT tools or IT-enabled learning mechanisms (Kane and Alavi, 2015) strengthens the collective ability to foster knowledge and establish a tech-driven work environment. This kind of work culture has the potential to nurture a digital mindset (Cennamo et al., 2020), making employees more receptive to new ideas and more adept at accumulating new knowledge, eventually enabling them to generate original knowledge. The use of tools would become standard practice, and in an environment marked by turbulence, organizations accustomed to these tools would adapt to new technologies more easily and naturally (Kane and Alavi, 2015).

The studies by Andriopoulos and W. Lewis, (2008) and Heracleous et al., (2017) provide valuable insights on portfolio diversification strategy, incorporating IT learning tools. The inclusion of IT components in strategy could prove beneficial during times of instability. One of the positive effects of this strategy is the capacity to integrate new employees quickly into the productivity flow by providing them with essential knowledge needed for the job. This approach also mitigates the loss of knowledge when an employee leaves. Thus, organizations using IT tools to structure and compress key production knowledge are less vulnerable to knowledge

gaps (Andriopoulos and W. Lewis, 2008; Heracleous et al., 2017; Kane and Alavi, 2007). However, explorative practices without an exploitative anchor lack financial sustainability, a risk that points toward the need for an integrative approach. The tension between these two strategies is not resolved by choosing one over the other, but by developing the organizational capacity to hold both simultaneously the ambidextrous organization.

4.4 Organizational Ambidexterity as Strategic Resolution

The advantage of a mature ambidextrous firm lies in its ability to operate two powerful engines simultaneously: the exploitative side that ensures short-term success and the explorative side that drives future competitiveness. As Benner and Tushman, (2003) note, adopting one approach does not mean relinquishing the other. Successfully integrating both into the organization's BM and philosophy can provide a significant market advantage and help the company adapt to environmental changes (Teece, 2007). One of the primary risks of focusing entirely on incremental process management routines and enhancing their productivity is that the rapidly changing digital environment may render these practices outdated and ineffective. An over-reliance on exploitative, short-term profitable practices may undermine a firm's future ability to stay competitive, increasing the likelihood of stagnation. A resource-based strategy can lead to rigidity and an inability to adapt to new changes.

When considering how this ambidextrous philosophy should be integrated into a firm's internal core BM, the literature offers several approaches. One such method involves **fragmenting tasks into subunits**. This approach envisions a granular architecture where different subunits are tasked with either exploitative or explorative practices, depending on the nature of the task at hand (Andriopoulos and W. Lewis, 2008; Benner and Tushman, 2003; Teece et al., 1997). Another method is **contextual ambidexterity**, which takes a more constructivist approach. In this framework, the social context, behavior, team practices, and interpersonal relationships help employees develop an integrated mindset that incorporates both explorative and exploitative practices. The study emphasizes the contradictory tensions inherent in balancing the exploitative and explorative approaches. It points out the "paradoxes of innovation," such as the tension between profit generation from day-to-day activities and the ability to generate new business ideas that may involve risks and uncertainties.

A key strategic route for balancing exploitative and explorative practices while remaining competitive in the market is the diversification of the project portfolio. If incremental, exploitative projects are active and profitable, they can sustain and mitigate any risks associated with more creative, explorative projects. If one project fails, the other profitable projects can offset the loss. This approach ensures that the company is not putting all its resources into one high-risk, high-reward venture.

Another paradoxical aspect of integrating an ambidextrous approach is the discipline-creativity dynamic among employees. Andriopoulos and W. Lewis,

(2008) propose the concept of “practical artists,” where discipline and passion coexist. The discipline aspect is visible in exploitative tasks, where a predefined structure exists, and employees must adhere to it. In contrast, creativity emerges when employees encounter new technological frontiers. Passion and creativity within a structured, disciplined environment led to less chaos and more predictability while still fostering the freedom necessary for innovation.

5. Conclusions

DT has become an overused term that, given its growing importance, now functions as an umbrella concept for various digitally-led initiatives, processes, and technologies. This proliferation has obscured what constitutes a genuine DT phenomenon. Following an analysis of the constituent terms of the concept and building on the definition proposed by Gong and Ribiere, (2021), this paper concludes that DT must involve digital technologies and a significant transformational outcome in terms of reshaping existing BMs. SOBs serve as a particularly fertile ground for implementing DT, both theoretically and practically, due to the intangible, knowledge-intensive nature of their value creation. Several strategies exist for SOBs to integrate DT within their BMs without causing major disruptions to current operations. Organizations may adopt explorative, exploitative, or ambidextrous practices that combine the two, managing DT adoption in specific parts of the organization while keeping core operations stable. This allows firms to satisfy both the need for stability and predictability and the imperative for innovation and growth.

References

1. Andriopoulos, C. W. & Lewis, M., 2008. *Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation*. *Organ. Sci.* 20, 696-717.
2. Appio, F.P., Frattini, F., Petruzzelli, A.M. & Neirotti, P., 2021. *Digital Transformation and Innovation Management: A Synthesis of Existing Research and an Agenda for Future Studies*. *J. Prod. Innov. Manag.* 38, 4-20. <https://doi.org/10.1111/jpim.12562>
3. Benner, M.J. & Tushman, M.L., 2003. *Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited*. *Acad. Manage. Rev.* 28, 238-256. <https://doi.org/10.5465/amr.2003.9416096>
4. Bennett, V.M. & Levinthal, D.A., 2017. *Firm Lifecycles: Linking Employee Incentives and Firm Growth Dynamics*. *Strateg. Manag. J.* 38, 2005-2018. <https://doi.org/10.1002/smj.2644>
5. Bode, M., Daneva, M., van & Sinderen, M., 2022. *Characterising the digital transformation of IT consulting services—Results from a systematic mapping study*. *IET Softw.*
6. Bogers, M.L.A.M., Garud, R., Thomas, L.D.W., Tuertscher, P. & Yoo, Y., 2022. *Digital innovation: transforming research and practice*. *Innovation* 24, 4-12. <https://doi.org/10.1080/14479338.2021.2005465>

7. Bouwman, H., Nikou, S. & de Reuver, M., 2019. *Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs?* Telecommun. Policy 43, 101828. <https://doi.org/10.1016/j.telpol.2019.101828>
8. Cennamo, C., Dagnino, G.B., Di Minin, A. & Lanzolla, G., 2020. *Managing Digital Transformation: Scope of Transformation and Modalities of Value Co-Generation and Delivery.* Calif. Manage. Rev. 62, 5-16. <https://doi.org/10.1177/0008125620942136>
9. Chen, H., Yao, Y. & Zhou, H., 2021. *How does knowledge coupling affect exploratory and exploitative innovation? The chained mediation role of organisational memory and knowledge creation.* Technol. Anal. Strateg. Manag. 33, 713-727. <https://doi.org/10.1080/09537325.2020.1840543>
10. Christensen, C., Dina, W. & Derek, B., 2013. *Consulting on the Cusp of Disruption.* Harv. Bus. Rev.
11. Corso, M., Giovannetti, G., Guglielmi, L. & Vaia, G., 2018. *Conceiving and Implementing the Digital Organization.* G Bongiorno Al Eds CIOs Digit. Transform. Springer Int. Publ. AG. https://doi.org/10.1007/978-3-319-31026-8_10
12. Crişan, E.L. & Stanca, L., 2021. *The digital transformation of management consulting companies: a qualitative comparative analysis of Romanian industry.* Inf. Syst. E-Bus. Manag. 19, 1143-1173. <https://doi.org/10.1007/s10257-021-00536-1>
13. Davidovski, V., 2018. *Exponential Innovation through Digital Transformation.* ICAIT'18 Novemb. 1-3 2018 Aizu-Wakamatsu Jpn.
14. Deelmann, T., 2018. *Does Digitization Matter? Reflections on a Possible Transformation of the Consulting Business.* V Nissen Ed Digit. Transform. Consult. Ind. Prog. Springer Int. Publ. AG. https://doi.org/10.1007/978-3-319-70491-3_3
15. Felzensztein, C., Crick, D., Gonzalez-Perez, M.A., Jurado, T. & Etchebarne Lopez, M.S., 2022. Capabilities and the internationalisation of smaller-sized, service-oriented firms in the southern hemisphere. J. Strateg. Mark. 30, 533-561. <https://doi.org/10.1080/0965254X.2020.1815235>
16. Ghobakhloo, M., 2020. *Industry 4.0, digitization, and opportunities for sustainability.* J. Clean. Prod. 252. <https://doi.org/10.1016/j.jclepro.2019.119869>
17. Gong, C. & Ribiere, V., 2021. *Developing a unified definition of digital transformation.* Technovation 102, 102217. <https://doi.org/10.1016/j.technovation.2020.102217>
18. Grönroos, C., 1991. *The Marketing Strategy Continuum: Towards a Marketing Concept for the 1990s.* Manag. Decis. 29. <https://doi.org/10.1108/00251749110139106>
19. Grover, V., Tseng, S.-L. & Pu, W., 2022. A theoretical perspective on organizational culture and digitalization. Inf. Manage. 59, 103639. <https://doi.org/10.1016/j.im.2022.103639>
20. Hanelt, A., Bohnsack, R., Marz, D. & Antunes Marante, C., 2021. A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. J. Manag. Stud. 58, 1159-1197. <https://doi.org/10.1111/joms.12639>
21. Hartl, E. & Hess, T., 2017. *The Role of Cultural Values for Digital Transformation: Insights from a Delphi Study.*
22. Heracleous, L., Papachroni, A., Andriopoulos, C. & Gotsi, M., 2017. *Structural ambidexterity and competency traps: Insights from Xerox PARC.* Technol. Forecast. Soc. Change 117, 327-338. <https://doi.org/10.1016/j.techfore.2016.11.014>

23. Hess, T., Matt, C., Benlian, A., & Wiesböck, F., 2016. Options for Formulating a Digital Transformation Strategy. | EBSCOhost [WWW Document]. URL <https://openurl.ebsco.com/contentitem/gcd:115879199?sid=ebsco:plink:crawler&id=ebsco:gcd:115879199> (accessed 2.19.25).
24. Ho, J.C., Tseng, F.-M. & Lee, C.-S., 2011. *Service Business Model Innovation: A Conceptual Model and A Framework for Management Consulting*. 2011 Int. Jt. Conf. Serv. Sci. <https://doi.org/10.1109/IJCSS.2011.56>
25. Kane, C.G. & Alavi, M., 2015. *Information Technology and Organizational Learning: An Investigation of Exploration and Exploitation Processes*. Organ. Sci. 18. <https://doi.org/10.1287/orsc.1070.0286>
26. Kane, G.C. & Alavi, M., 2007. *Information Technology and Organizational Learning: An Investigation of Exploration and Exploitation Processes*. Organ. Sci. 18, 796–812. <https://doi.org/10.1287/orsc.1070.0286>
27. Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N. & Roig-Tierno, N., 2021. *Digital Transformation: An Overview of the Current State of the Art of Research*. Sage Open 11, 21582440211047576. <https://doi.org/10.1177/21582440211047576>
28. Lepore, D., Dubbini, S., Micozzi, A. & Spigarelli, F., 2020. *Knowledge Sharing Opportunities for Industry 4.0 Firms*. J. Knowl. Econ. <https://doi.org/10.1007/s13132-021-00750-9>
29. Lerch, C. & Gotsch, M., 2015. *Digitalized Product-Service Systems in Manufacturing Firms: A Case Study Analysis*. Res.-Technol. Manag. 58, 45-52. <https://doi.org/10.5437/08956308X5805357>
30. Matt, C., Hess, T. & Benlian, A., 2015. *Digital Transformation Strategies*. Bus. Inf. Syst. Eng. 57, 339-343. <https://doi.org/10.1007/s12599-015-0401-5>
31. Paiola, M., Grandinetti, R., Kowalkowski, C. & Rapaccini, M., 2024. *Digital servitization strategies and business model innovation: The role of knowledge-intensive business services*. J. Eng. Technol. Manag. 74, 101846. <https://doi.org/10.1016/j.jengtecman.2024.101846>
32. Pappas, I.O., Mikalef, P., Giannakos, M.N., Krogstie, J. & Lekakos, G., 2018. *Big data and business analytics ecosystems: paving the way towards digital transformation and sustainable societies*. Inf. Syst. E-Bus. Manag. 16, 479-491. <https://doi.org/10.1007/s10257-018-0377-z>
33. Plugge, A., Nikou, S. & Bouwman, H., 2020. The revitalization of service orientation: a business services model. Bus. Process Manag. J. 27, 1-24. <https://doi.org/10.1108/BPMJ-02-2020-0052>
34. Šimberová, I., Korauš, A., Schüller, D., Širáňová, L., Straková, J. & Váchal, J., 2022. *Threats and Opportunities in Digital Transformation in SMEs from the Perspective of Sustainability: A Case Study in the Czech Republic*. Sustainability 14, 3628. <https://doi.org/10.3390/su14063628>
35. Tavoletti, E., Niloofar, K., Corrado, C. & Cecilia, G., 2021. *Business model innovation and digital transformation in global management consulting firms*. Eur. J. Innov. Manag. Emerald Publ. Ltd.
36. Teece, D.J., 2010. Chapter 16 - Technological Innovation and the Theory of the Firm: The Role of Enterprise-Level Knowledge, Complementarities, and (Dynamic) Capabilities, in: Hall, B.H., Rosenberg, N. (Eds.), *Handbook of the Economics of Innovation, Handbook of The Economics of Innovation*, Vol. 1. North-Holland, pp. 679-730. [https://doi.org/10.1016/S0169-7218\(10\)01016-6](https://doi.org/10.1016/S0169-7218(10)01016-6)

37. Teece, D.J., 2007. *Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance*. *Strateg. Manag. J.* 28, 1319-1350. <https://doi.org/10.1002/smj.640>
38. Teece, D.J., Pisano, G. & Shuen, A., 1997. *Dynamic capabilities and strategic management*. *Strateg. Manag. J.* 18, 509-533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7%253C509::AID-SMJ882%253E3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7%253C509::AID-SMJ882%253E3.0.CO;2-Z)
39. Verhoef, P.C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N. & Haenlein, M., 2021. *Digital transformation: A multidisciplinary reflection and research agenda*. *J. Bus. Res.* 122, 889-901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
40. Wacker, J.G., 2004. *A theory of formal conceptual definitions: developing theory-building measurement instruments*. *J. Oper. Manag.* 22, 629-650. <https://doi.org/10.1016/j.jom.2004.08.002>