SYSTEMATIC LITERATURE REVIEW: DIGITAL TRANSFORMATION CHALLENGES AND STRATEGIES IN THE CONTEXT OF ENTERPRISE ARCHITECTURE

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I. INTRODUCTION

Industrial revolution 4.0 made Digital Technology is growing rapidly, the use of the Internet of Things (IoT), Robotics, Artificial Intelligence and Big data has covered the fields of industry, telecommunications, government, business and education. Digital transformation is an interesting research topic in the fields of information systems and technology, industry, economics and business.[1] and Governance.

Digital transformation is currently the dominant condition in business transformation using Information Technology. Digital transformation is a driving force in technology and digitalization of business strategies because digital products are able to increase the ability to access cloud services and change business behaviour.[2]. The company's top management views the digitalization process as an opportunity. Consumer behaviour in using technology is the main driver for companies in choosing technology. In the digital era, focusing on consumer desires is important. *Enterprise architecture* (EA) is a driver of change in the organization. [3], must be prepared a perfect enterprise architecture application. [4], for this reason digital transformation has become a very important strategy for companies in the fields of industry, manufacturing, automotive, government, which have the aim of improving service and efficiency.[5] and education that has undergone changes in academic life, [6].

Digital transformation has changed the way we live, work, communicate and work together. The advantages of Information Technology are the driving force and key factor in digital transformation,[7]mentioned Internet of Things (IoT) technology has a fundamental impact on digital transformation. Disruptive strategies that can quickly change the market in information systems that are integrated with internet of things technology, cloud computing and knowledge management provide adequate decision support for the business environment.

Currently companies need to invest in digital transformation, due to consumer demand or market pressure, but at the same time companies are experiencing many challenges in planning and implementing the digital transformation process. [1].

This problem is one of the things that attracts researchers in the field of digital transformation. The research questions are (1) what is the contribution of Enterprise Architecture in responding to the challenges of Digital Transformation? ; (2) What strategies can be used in the digital transformation process?

The purpose of this study is to understand the challenges and strategies of digital transformation in the context of Enterprise Architecture

II. METHODOLOGY

The research methodology in this paper uses the Systematic Literature Review with the PRISMA (Preferred Reporting Items for Systematics Review and Meta Analyses) approach, with the following steps: 1) Identifying based on the searched database, 2) Filtering, 3) selecting papers as appropriate, 4 qualitative synthetic studies, 5) Selection of data items, qualitative synthesis. [8]. The purpose of this research is to determine the challenges faced and strategies in digital transformation in the context of enterprise architecture.

Identify databases sourced from Science Direct, ACM Digital Library, Willey Online Library, IEEE, Emerald Insight Journal and Sage Journal. The research is a research published in the Journal and Proceedings of an International conference. The synthesized research started from research from 2015 to 2021 as shown in table 1. Table 1 shows the number of articles resulting from search literature with keywords "digital transformation" AND "enterprise architecture".

TABLE 1. NUMBER OF ARTICLES FROM LITERATURE SEARCH PENELUSURAN

The steps taken in the process of identifying the source database are:

Step 1: identify the source database according to the criteria.
Step 2: identification based on relevant topics
Step 3: selection of articles based on keywords.
Step 4: final selection and review of selected articles.

Based on the selection results in table 1, it can be seen that 86% of research in the field of digital transformation of enterprise architecture was researched in 2018 - 2021, 12% in 2013 - 2017 and in 2008 - 2012 as much as 0%, 2003 - 2007 1% and 1998 - 2002 as much as 1% (table 2).

Year	amount	Citation
1998 - 2002	2	4091
2003 - 2007	3	70
2008 - 2012	1	0
2013 - 2017	28	2933
2018 - 2021	203	2293
TOTAL	**237**	**9387**

TABLE 2. PERCENTAGE OF SEARCH RESULTS BY YEAR OF RESEARCH

Year	1998 -2002	2003-2007	2008-2012	2013-2017	2018 - 2021
amount	1	1	0		
Percentage	1%	1%	0%	12%	86%

III. RESULTS AND DISCUSSION

The discussion begins with an analysis of the publications of Digital Transformation and Enterprise Architecture which explains the results of the search for articles, the year of publication, the object used for research, the country that produces the research and the research theme. To facilitate analysis on the theme of challenges and strategies for digital transformation and enterprise architecture.

A. PUBLICATION OF DIGITAL TRANSFORMATION AND ENTERPRISE ARCHITECTURE.

The literature study on the digital transformation of enterprise architecture is a research study that researched in the past six years. The Publish or Perish application with a choice of Google Scholar data sources found 237 (two hundred and thirty-seven) articles and 9387 (nine thousand three hundred and eighty-seven) citations.

The results of the Publish or Perish search with the keywords "digital transformation" AND "enterprise architecture" obtained the title The Application of Petri Nets to workflow Management as a previous study written in 1998 in this paper discussing the Petri net application as a tool used to describe workflows management. This study explains that

workflow management can be used as controlling, monitoring, optimizing and supporting business processes written by WMP Van der Aalst, 1998.

This research was cited 4091 times, it can be concluded that The Application of Petri Nets to workflow Management is a pioneer research in the field of digital transformation, from 1998-2012 there were 5 (five) research titles related to digital transformation and enterprise architecture. The development of research in the field of digital transformation develops from 2013 to 2021 with a total of 231 research titles.

TABLE 3. RESEARCH YEAR

Year	Science Direct	ACM DL	Willey OL	IEEE	Emerald IJ	Sage Journal
2015	-	-	-	1	-	1
2016	-	1	-	1	-	2
2017	1	1	-	4	-	-
2018	2	1	1	3	-	-
2019	3	2	1	3	3	-
2020	6	-	3	5	3	-
2021	1	-	1	-	-	1
Total	**13**	**5**	**5**	**17**	**6**	**4**

This literature study was conducted with the aim of knowing the challenges and strategies of digital transformation in enterprise architecture. The methodology used is a systematics literature review (SLR) from six data base sources, namely Science Direct, ACM Digital Library, Willey Online Library, IEEE, Emerald Insight Journal and Sage Journal. The search on the topic of digital transformation of enterprise architecture was carried out based on the keywords "digital transformation" AND "enterprise architecture" in each data base found from 2015 to 2021. Table 4 shows the results of filtering articles with the keywords "digital transformation" AND "enterprise architecture".

Table 4 Number of Articles Filtered Results

Source of Database	Stage 1 (#of paper)	Stage 2 (#of title)	Stage 3 (of abstract and Keyword)	Stage 4 of (Selected for Final Reviewer)
Science Direct	72	47	21	13
ACM Digital Library	19	13	8	5
Willey Online Library	11	11	9	5
IEEE	31	26	20	17
Emerald Insight Journal	42	17	15	6
Sage Journal	8	7	5	4
TOTAL	**183**	**121**	**78**	**50**

Based on the search results in table 4, it is shown that the publisher of science direct is the publisher that publishes the most research with the theme "digital transformation" AND "enterprise architecture" in the first phase, 72 articles were obtained, followed by the emerald insight journal with 42 articles, IEEE 31 articles. , ACM digital library 19 articles, willey online library 11 articles, sage journal 8 articles.

In the fourth stage of selection, the IEEE publisher obtained the most results with 17 articles, science direct 13 articles, emerald insight journal 6 articles, ACM digital library and Willey Online Library with 5 articles and Sage Journal 4 articles.

Based on table 5 research objects, it can be seen that the most research objects are Industry, both the manufacturing industry, automotive and industry in general as many as 10 papers. 4 papers for government and higher education research objects. 3 papers for the object of health research, 2 papers for retail companies and SMEs, while 33 papers do not define the object of research because it uses the literature review method.

Table 6 shows the results of the analysis of the countries the researchers come from, from 26 countries Germany is the most productive country in producing research in the field of digital transformation in enterprise architecture as many as 7 research papers from 6 data bases. 3 papers from Norway, France, UK and Portugal. 2 papers from USA, Russia, India, Sweden, Australia, Spain, and Finland, 14 other countries including Indonesia 1 paper and 4 papers do not define the country of origin.

TABLE 5 RESEARCH OBJECTS ARTICLES

Object of research	Science Direct	ACM DL	Willey OL	IEEE	Emerald IJ	Sage Journal
SME's Enterprise	1				1	
Government	1					
Automotive, Manufacturing Industry	3		2	3	1	1
Education organization		1	1	1	1	
Healthcare Organization	1		1	1		
Retail		1				1
Government	1	2				1
Consulting Services						1
Literature Review	6	1	1	12	3	
TOTAL	**13**	**5**	**5**	**17**	**6**	**4**

Country	Science Direct	ACM DL	Willey OL	IEEE	Emerald IJ	Sage Journal
Germany	5			1	1	
China	1					
norway	3					
Italy					1	
Portugal			1	2		
USA				1	1	
Hungary					1	
France	1			2		
Japan				1		
Ireland						1
Belgium						1
Russia		1	1			
India		1		1		
UAE		1				
Greece		1				
Denmark		1				
UK	2					1
Sweden			1	1		
Spain			1	1		
Australia			1	1		
Canada					1	
Indonesia					1	
Colombia				1		
Chile				1		
Finland				2		
Czech	1					
Undefined				3		1
TOTAL	**13**	**5**	**5**	**17**	**6**	**4**

Table 7 is the result of the analysis related to the research theme. There are 12 research themes with the most themes related to conceptual themes as many as 25 papers, 7 papers relating to digital strategy, strategy & organization change. The distribution of other themes relates to competitive advantage, sustainability, dynamic capability, EA framework, EA Management, Risk Management, and e-government.

B. THE CONTRIBUTION OF ENTERPRISE ARCHITECTURE TO ADDRESS THE CHALLENGES OF DIGITAL TRANSFORMATION

Technological advances in the 4.0 era have affected all companies. Companies are faced with challenges and changes. With an evolving approach, companies will be able to adapt to changes in digital transformation. Digital transformation is a challenging task that involves reconfiguring technology, organization and people.

TABLE 6. RESEARCHER COUNTRY OF ORIGIN

Theme	Science Direct	ACM DL	Willey OL	IEEE	Emerald IJ	Sage Journal
Competitive advantage	1					
Conceptual	8	2		10	4	1
Sustainability	1					
Digital strategy	2			1		3
Place Based Strategy					1	
EA Planning			1	1		
Dynamic Capability	1				2	
EA Management			1	1		
EA Framework		2	1	1		
Risk Management			1	1		
Strategy & Organizations Change			1	1		
e-government		1				
TOTAL	**13**	**5**	**5**	**17**	**7**	**4**

Table 7. Research Themes

Change management is more important than technology, but there are many problems in managing digital transformation. Various challenges are faced when companies carry out digital transformation. Starting from infrastructure, business processes, human resources to corporate architecture, to business strategies and information technology strategies that keep up with changes. Enterprise Architecture was introduced as an approach to face challenges and transform into a digital-based company[9].

Digital transformation is a major challenge of regional innovative systems that require a series of strategic actions [10]. The main challenge in digital transformation of an organization is the high complexity of the unfeasible for the rapid development of new solutions[11].

The results of the literature review analysis carried out explain that to answer the first research question, namely 1) what is the contribution of Enterprise Architecture in answering the challenges of Digital Transformation?

The challenges of digital transformation are:[4]
1. Lack of urgency for change
2. Conflicting roles and goals (corporate coordination and leadership issues)
3. Lacks vision or fails to communicate.
4. Cultural issues
5. Ineffective information technology in the system currently used.
6. Lack of collaboration between business units
7. Concerns about law enforcement.
8. Unclear business case
9. Insufficient resources
10. Skills you don't have.

Digital transformation has always focused on standardization and process integration, not on sustainable business adaptation, benefiting from digital technology in response to defined strategies.

To develop an appropriate and flexible Enterprise Architecture, the digital transformation process must be cyclical and adaptable. Organizations must go through each stage in the change cycle.

1. Supervision of the external and internal environment.
2. Continuous evaluation of the organization's value proposition, value creation, value appropriation.
3. Decision making ability
4. Ability to reconfigure and manage infrastructure and services

Sustainable competitive advantage in a volatile environment requires integrated organizational flexibility and resilience. This requires a design that has high adaptability.

C. DIGITAL TRANSFORMATION STRATEGY IN THE CONTEXT OF ENTERPRISE ARCHITECTURE.

In the classical sense, strategy is a collection of actions that the company plans to achieve long-term goals. According to research[12]The strategy that can be done for the digital transformation process is a digital strategy which is defined as a description of the entire vision of the company in the context of digitalization including strategic steps to achieve it. Digital strategy describes digitization in a concrete way from the short, medium and long term, the purpose of digitization in the context of products, services, value creation, and corporate organizational culture.

Digital technology is an innovation [13]. So that the strategy carried out in the context of digital transformation aims to innovate, increase dynamic capabilities, BPM capabilities,[14] [15] [16].

The following is the state of the art Digital Transformation strategy in the context of Enterprise Architecture in Table 8

Table 8 State of The Art Digital Transformation Strategy in the context of Enterprise Architecture

Author	Finding
(Goerzig & Baurnhansl, 2018)	An important point in digital transformation is business strategy. The organization's goal is to create differentiated value that applies to digital resources. The strategy carried out in this study represents a new, lightweight and agile approach with the concept of agile enterprise architecture for digital transformation which is divided into macro cycles to define the architecture of all SME's and micro cycles to implement and test single functions.
(Hustad & olsen, 2021)	Describe the topic of Digital Infrastructure and highlight the character of sustainability in a Service Oriented Architecture (SOA) environment. The concept of digital infrastructure, SOA, microservices and cloud-based services and the benefits and challenges of creating a sustainable infrastructure based on a SOA environment. The benefits of SOA are to increase changeability and efficiency, reduce integration costs, improve agility and flexibility, utilization of existing resources, faster time to market, easier possibility to make change, continuous improvement of business processes and improved return on investment. The strategy proposed in this study is seen from the Sustainable characteristic of SOA and sustainable challenges
(Lipsmeier et al, 2020)	The evolution of digital strategy is divided into 3 parts, namely separate considerations in 1962-1965: strategy & structure channel, 1982-1989 IBM's business systems planning; Alignment 1989 – 1993 : strategic alignment model Henderson venkatraman; Integration/Fusion 2010 – 2013 today digital business strategy framework bharadwaj et al. The process of developing a digital strategy: 1) define of a digital strategy, 2) positioning of a digital strategy; 3) process for the development of a digital strategy. In the digital strategy process, the first thing to do is to formulate strategic objectives in digital terminology at the corporate level, business level, and functional level. This research resulted in a framework for a digital strategy
(Brunetti et al., 2020)	Digital transformation is a major challenge for regional innovative systems that require a series of multifaceted strategic actions that are divided into 3 pillars. Pillar one: "culture and skills" includes three areas of strategic action as follows,

	The second pillar: "infrastructure and technologies" shows the need for information, interaction and artificial intelligence as the main strategic actions. The third pillar: "ecosystems" highlights the importance of investing in medium to long term missions, partnerships and quality of life
(Gomes et al., 2020)	EA Planning in the context of Digital Transformation in Higher Education, is seen from two dimensions, namely the Digital Business Architecture Dimension and the Information System/Technology Dimension. In this study, it provides the steps that must be taken to make EA Planning in the context of Digital Transformation
(Assar & Hafsi., 2019)	Activities in Digital Transformation Management Activity 1: Strategy management: to define DT objectives, namely benefits, organizational capabilities, top line growth, customer needs, organizational structure, digital strategy, customer touch points. Activity 2: Strategic management: core value analysis of company proportions, digitally modified business model, socially informed knowledge, predictive analysis, market trends, digital drivers, market information. EAM has limited potential to support DT
(Demeter et al; 2021)	The aim is to analyze the changes in the resources that underlie digital transformation in the manufacturing sector. Research takes the theory of Digital Capabilities. Analyzing the four transformation stages captured from the components of the Digital Capabilities adaptation (sensing capability, absorptive capacity, integrative capability, relational capability).
(Van De Steene & Knight, 2017)	The success of digitalization projects in governments around the world is due to the technology used to improve services by governments. DT in government is not just "paperless" but DT is a transformation step in digital form that increases innovation and creativity, compared to traditional methods. DT in the context of learning is not just using a video conference system or implementing a new offer in a management system, but rather on the complexity and impact of technology on society. Digital technology is an innovation
(Antonucci et al; 2021)	This study uses a quantitative method between BPM Capabilities and Dynamic variables on Digitalization Benefits. The results of the study reveal that the strength between Business Process Management and the benefits of digitization varies, overall, assessing the relationship between BPM and the benefits of digitalization is less dominant. The main highlight is the ordinary-dynamic and direct-indirect distinctions and the value of better understanding.
(Mikalef et al; 2020)	Dynamic capabilities is the theory that has the most influence on the study of strategic management. In this study, it was concluded that big data analysis technology is the driving technology for dynamic capability.

The results of the research analysis that have the theme of digital transformation strategy are:

1. *Agile enterprise architecture* for digital transformation is a strategy that can be done to meet competitive advantage. Digital transformation by utilizing information technology can change the approach and motivation of new customer values and competitive advantages. The concept of agile enterprise architecture is divided into macro cycles to define the architecture of all SME's and micro cycles to implement and test single functions. agile enterprise architecture for digital transformation[11]

2. *Service Oriented Architecture.* Digital Infrastructure is the foundation of digital transformation in the Organization to reach the potential of new digital technologies. In this paper, Service Oriented Architecture is a potential infrastructure to achieve sustainable digital transformation. SOA digital infrastructure[17] can be seen in the following table

TABLE 7. SOA AS A SUSTAINABLE DIGITAL INFRASTRUCTURE

Sustainable characteristics of SOA	Sustainable challenges
Keeping legacy systems	Inneficient legacy systems that are kept, user resistance
Reuse of resources and services	Difficulties in prioritizing the service to be implemented
Flexibility and agility	Too chaotic, lacking overview, governance challenges
Supporting green IT Approach	The reuse opportunities are not optimized, not managing to reduce power, inefficient engineering approaches, lack of skills among systems developers, micro services creating problems.
Business processes - renewal	User resistance, difficulties in making improve processes
Cost efficiency	Goals not achieved; more resources are used than predicted
Less maintenance	More governance is need than expected
Possibilities for extending SOA outside of the enterprise with cloud computing services	Difficulties with combining SOA and cloud services, selecting wrong services for the cloud
IT and business alignment	Lack of good communication culture between IT and Business, alignment is not achieved
Efficient SOA governance mechanism, efficient Systems Development culture	Challenges of establishing of efficient SOA governance, systems developers are not aligned across teams, challenges with governance when SOA is combined with cloud services.

3. **Digital strategy,** one of the main obstacles in the company's digital transformation process is the lack of a digital strategy that coordinates the concept of digitization in line with the business strategy. The main elements for digital strategy are digital guiding principles, digital culture, digital competence, digital transformation of products & services, digital transformation of value creation, IT/OT Architecture, value creation network, measures organization. The process of developing a digital strategy: 1) define of a digital strategy, 2) positioning of a digital strategy; 3) process for the development of a digital strategy. In the digital strategy process, the first thing to do is to formulate strategic objectives in digital terminology at the corporate level, business level, and functional level.[12]..[12]

4. **Place based strategy,** this study shows that self-intervention is not sufficient to address digital transformation from a systemic perspective. In addition, this study outlines the potential contribution of each stakeholder to drive digitalization in the macro-regions within[10]

5. **Enterprise Architecture Planning** for the Digital Transformation approach. The digital business architecture dimension is carried out by 1) analysis of the current company strategy and business model; 2) define the digital strategy (positing strategy); 3) define the business model; 4) implementation of new or modified business models. while the Information System and Technology Dimension has the following steps: 1) evaluate the enterprise operational backbone and 2) develop a digital service platform plat[18].

6. **Digital Transformation Management,** Activity 1: Strategy management: to define DT objectives, namely benefits, organizational capabilities, top line growth, customer needs, organizational structure, digital strategy, customer touch points. Activity 2: Strategic management: core value analysis of company proportions, digitally modified business model, socially informed knowledge, predictive analysis, market trends, digital drivers, market information.[19]

7. **Digital capabilities,** the aim is to analyze the changes in the resources that underlie digital transformation in the manufacturing sector. Research takes the theory of Digital Capabilities. Analyzing the four transformation stages captured from the components of the Digital Capabilities adaptation (sensing capability, absorptive capacity, integrative capability, relational capability).[16]

IV. CONCLUSION

Digital transformation is carried out to answer the challenges of technological development as well as developing innovation strategies. The main challenge in the digital transformation process is the high complexity and unpreparedness of the company in terms of infrastructure, technology, resources, employee skills and organizational culture. Digital transformation strategies in the context of enterprise architecture include agile enterprise architecture, service oriented architecture, digital strategy and enterprise architecture planning.

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BIBLIOGRAPHY

1. K. Sandkuhl, N. Shilov, and A. Smirnov, "Facilitating digital transformation by multi-aspect ontologies: Approach and application steps," *IFAC-PapersOnLine*, vol. 52, no. 13, pp. 1609–1614, 2019, doi: 10.1016/j.ifacol.2019.11.430.

2. A. Zimmermann, R. Schmidt, J. Bogner, D. Jugel, and M. Möhring, "Software Evolution for Digital Transformation," no. Enase 2018, pp. 205–212, 2019, doi: 10.5220/0006815702050212.

3. S. Bondar, J. C. Hsu, A. Pfouga, and J. Stjepandić, "Agile Digitale Transformation of Enterprise Architecture Models in Engineering Collaboration," *Procedia Manuf.*, vol. 11, no. June, pp. 1343–1350, 2017, doi: 10.1016/j.promfg.2017.07.263.

4. M. Hafsi and S. Assar, "What enterprise architecture can bring for digital transformation: An exploratory study," *Proc. - CBI 2016 18th IEEE Conf. Bus. Informatics*, vol. 2, pp. 83–89, 2016, doi: 10.1109/CBI.2016.55.

5. Y. Gong, J. Yang, and X. Shi, "Towards a comprehensive understanding of digital transformation in government: Analysis of flexibility and enterprise architecture," *Gov. Inf. Q.*, vol. 37, no. 3, p. 101487, 2020, doi: 10.1016/j.giq.2020.101487.

6. H. Santos, J. Batista, and R. P. Marques, "Digital transformation in higher education: The use of communication technologies by students," *Procedia Comput. Sci.*, vol. 164, pp. 123–130, 2019, doi: 10.1016/j.procs.2019.12.163.

7. A. Zimmermann, R. Schmidt, K. Sandkuhl, M. Wißotzki, D. Jugel, and M. Möhring, "Digital enterprise architecture-transformation for the internet of things," *Proc. 2015 IEEE 19th Int. Enterp. Distrib. Object Comput. Conf. Work. Demonstr. EDOCW 2015*, pp. 130–138, 2015, doi: 10.1109/EDOCW.2015.16.

8. A. Liberati *et al.*, "The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration.," *BMJ*, vol. 339, 2009, doi: 10.1136/bmj.b2700.

9. F. S. Aliee, H. Kashfi, and B. Farahani, "The evolving enterprise architecture: A digital transformation perspective," *ACM Int. Conf. Proceeding Ser.*, vol. Part F1481, pp. 179–183, 2019, doi: 10.1145/3312614.3312651.

10. F. Brunetti, D. T. Matt, A. Bonfanti, A. De Longhi, G. Pedrini, and G. Orzes, "Digital transformation challenges: strategies emerging from a multi-stakeholder approach," *TQM J.*, vol. 32, no. 4, pp. 697–724, 2020, doi: 10.1108/TQM-12-2019-0309.

11. D. Goerzig and T. Bauernhansl, "Enterprise Architectures for the Digital Transformation in Small and Medium-sized Enterprises," *Procedia CIRP*, vol. 67, pp. 540–545, 2018, doi: 10.1016/j.procir.2017.12.257.

12. A. Lipsmeier, A. Kühn, R. Joppen, and R. Dumitrescu, "Process for the development of a digital strategy," *Procedia CIRP*, vol. 88, pp. 173–178, 2020, doi: 10.1016/j.procir.2020.05.031.

13. S. Van De Steene and V. Knight, "Digital transformation for prisons: Developing a needs-based strategy," *Probat. J.*, vol. 64, no. 3, pp. 256–268, 2017, doi: 10.1177/0264550517723722.

14. P. Mikalef, R. van de Wetering, and J. Krogstie, "Building dynamic capabilities by leveraging big data analytics: The role of organizational inertia," *Inf. Manag.*, no. November, p. 103412, 2020, doi: 10.1016/j.im.2020.103412.

15. Y. L. Antonucci, A. Fortune, and M. Kirchmer, "An examination of associations between business

process management capabilities and the benefits of digitalization: all capabilities are not equal," *Bus. Process Manag. J.*, vol. 27, no. 1, pp. 124–144, 2021, doi: 10.1108/BPMJ-02-2020-0079.

16. K. Demeter, D. Losonci, and J. Nagy, "Road to digital manufacturing – a longitudinal case-based analysis," *J. Manuf. Technol. Manag.*, vol. 32, no. 3, pp. 820–839, 2021, doi: 10.1108/JMTM-06-2019-0226.

17. E. Hustad and D. H. Olsen, "Creating a sustainable digital infrastructure: The role of service-oriented architecture," *Procedia Comput. Sci.*, vol. 181, no. 2019, pp. 597–604, 2021, doi: 10.1016/j.procs.2021.01.210.

18. R. Gomes, A. M. R. Da Cruz, and E. F. Cruz, "EA in the Digital Transformation of Higher Education Institutions," *Iber. Conf. Inf. Syst. Technol. Cist.*, vol. 2020-June, no. June, pp. 24–27, 2020, doi: 10.23919/CISTI49556.2020.9141086.

19. S. Assar and M. Hafsi, "Managing strategy in digital transformation context: An exploratory analysis of enterprise architecture management support," *Proc. - 21st IEEE Conf. Bus. Informatics, CBI 2019*, vol. 1, pp. 165–173, 2019, doi: 10.1109/CBI.2019.00026.