Journal of Applied Engineering and Technological Science
Vol 5(1) 2023: 197-212

THE BUSINESS DIGITALIZATION MODEL TO ENHANCE FAMILY BUSINESS PERFORMANCE

Ricky Adrian Gunawan[1], Andika Pratama[2], Arta Moro Sundjaja[3*]
Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta, Indonesia 11480[1,2,3]
asundjaja@binus.edu

Received : 05 May 2023, Revised: 30 October 2023, Accepted : 04 November 2023
**Corresponding Author*

ABSTRACT
The COVID-19 pandemic forces Indonesian family businesses, from micro to enterprise companies, to accelerate their digital business transformation by adopting e-business solutions. A previous study proposed a conceptual model to examine the determinant factors of e-business performance at Saint-Gobain Weber, France. Therefore, the researchers are willing to replicate the conceptual model in the context of the Indonesian family business. This research investigates the elements that influence the performance of e-business, with a focus on the mediating role of business digitalization and the development of technological value. The research design is a quantitative approach using structural equation modeling. The researchers cannot determine the population size due to association access restrictions. The sample size determination method uses G-Power analysis with the following criteria: test family is t-test, tails are one, the effect size is 0.15, an alpha level is 0.05, the power is 0.80, and the number of predictors is three. Based on the g-power calculator results, the sample size is 43 respondents, and the sampling technique is convenience. The data was analyzed using Smart PLS 4.0.9.5. Based on the hypothesis testing results, the researchers conclude that family business performance is affected by digital technology value development. Business digitalization and organizational digital culture positively affect digital technology value development. Moreover, organizational digital culture also positively affects business digitalization. Finally, the mediation of digital technology value development is accepted. However, There is an absence of a significant relationship between business digitalization and business performance, organizational digital culture and business performance, as well as the mediation of business digitalization. The R^2 of business performance, business digitalization, and digital technology value development is 24.2%, 46%, and 49.3%. Therefore, organizational digital culture is important for family business digitalization and digital value development. Family business owners must strengthen their digital culture and realize the value of digital transformation to improve their business performance. Finally, our research findings also benefit the digital transformation in family business research.
Keywords: *Digital Transformation, Business Performance, Digital Culture, Family Business*

1. Introduction

In the 4.0 industrial era, technology has progressed further. Companies focusing on service design rather than crucial management information, such as "huge data," which is vital to the industrial sector, must utilize technology. Eighty-two percent of Indonesia's gross domestic product (GDP) is generated by family-owned businesses, which account for 40 percent of market capitalization in sectors such as agriculture (74%), consumer goods (45%), energy (65%), and real estate (91%) (Sumengkar, 2022). The coronavirus pandemic has significantly affected the world economy and the ability of family-owned businesses to stay in business, especially when it comes to digital transformation. The traditional business models are currently facing challenges due to the changing expectations and behaviors of customers, as well as the emergence of new market players who introduce disruptive digital business concepts that are seeing significant growth. (Verhoef et al., 2021).

Digital transformation is a multifaceted and protracted process of systems engineering, encompassing four distinct phases that facilitate the advancement of an organization's digital infrastructure. With limited resources, most family businesses need help to address these complex issues. As digital technologies transform manufacturing processes and employees work and collaborate, businesses face significant challenges (Javaid et al., 2022). Businesses undertaking digital transformation with optimistic estimates of significant commercial gains for consumers and organizations failing due to cultural conflicts (Ainurrofiq & Amir, 2023).

The previous research related to digital transformation has been done in the context of family business (Alonso et al., 2019; Bouncken & Schmitt, 2022; Putritamara et al., 2023; Schulze & Bövers, 2022), multinational company (Martínez-Caro et al., 2020), and small medium enterprise (SME) (Leso et al., 2023; Qi et al., 2023). Moreover, the previous research has examined the association of digital transformation with firm performance (Martínez-Caro et al., 2020), business resilience (Putritamara et al., 2023; Schulze & Bövers, 2022), family business adaptation (Alonso et al., 2019), and degree of digital transformation (Qi et al., 2023).

The previous research conducted by purtritamara (2023) shows that dynamic capabilities are important for bookkeeping family businesses to initiate digital transformation during the COVID-19 pandemic in Indonesia. Future research may replicate the model in other sectors or countries based on their study limitation. Instead of using quantitative research to examine business resilience phenomena, the previous research used multiple case study approaches to explore how and why family business owners respond to the crisis based on their resilience dimension (Schulze & Bövers, 2022). They suggest the resilience dimension can be tested using ecosystem and social network theory to understand how the family business owner managed the crisis.

The previous research explored the relationship between research and development investment, company strategy, top management structure, competitor pressure, government support, and innovation output on digital transformation maturity (Qi et al., 2023). The future research direction is extending the TOE framework or applying prominent theory to understand digital transformation phenomena. Using a qualitative approach, the previous study reveals the relationship between dynamic capability, networking, knowledge acquisition, and innovation in firm adaptation(Alonso et al., 2019). They proposed that future research should focus on applying the framework in border firms that adapt to the major disruption and include the socio-economic aspect.

The theory used to explain the phenomena is dynamic capabilities (Alonso et al., 2019; Putritamara et al., 2023), Sociotechnical System (STS) Theory (Imran et al., 2021), Technology Organization and Environment (TOE) Theory (Furjan et al., 2020; Qi et al., 2023), and knowledge-based approach (Alonso et al., 2019). However, previous research has developed conceptual models for understanding digital transformation (Leso et al., 2023; Martínez-Caro et al., 2020) and the digital maturity model (Bouncken & Schmitt, 2022). From research location, the previous research related to digital transformation has been done in Indonesia (Putritamara et al., 2023), China (Qi et al., 2023), Germany (Bouncken & Schmitt, 2022; Schulze & Bövers, 2022), England (Alonso et al., 2019), Croatia (Furjan et al., 2020), Switzerland (Bouncken & Schmitt, 2022), Nordic countries (Imran et al., 2021), Brazil (Leso et al., 2023), and France (Martínez-Caro et al., 2020).

Previous research on digital transformation in family business is still debated among academics. Previous research proposed sociotechnical system theory for examining the digital transformation phenomena in large, hard-core engineering organizations in Nordic countries using a case study approach (Imran et al., 2021). STS theory enlightens that culture, leadership, and structure are critical social factors of digital transformation. The uncertainty and swiftness of customer needs may trigger reactive digital transformation, making it challenging for small and medium-sized firms to adapt (Bouncken & Schmitt, 2022). Therefore, it is important to formulate the digital maturity model for assessing the readiness of SME digitalization. The need for a digital transformation strategy that accommodates organization ambidexterity, culture, and resource constraints for the firm top management to initiate the digital transformation process. Using a case study approach, another study explores the technology and business concept for digital transformation initiatives in Croatian companies (Furjan et al., 2020).

In contrast, previous research also attempts to validate the digital transformation phenomena using prominent theory and conceptual framework. The utilization of TOE Theory and Fuzzy Set Qualitative Comparative Analysis (FsQCA) methodology enables the identification of a comprehensive perspective and elucidation of the intricate interplay between digital transformation in enterprises. The findings reveal that there are two types of digital transformation: high digital transformation and low digital transformation, with an emphasis on specialized, refined, differentiated, and inventive firms. However, the study used secondary data

from the annual report, which cannot provide details of the digital transformation driver and path. Another study applies dynamic capability theory and structural equation modeling (SEM) to understand the digital transformation from strategic alignment and IT readiness in bookkeeping SMEs in Indonesia due to the COVID-19 pandemic (Putritamara et al., 2023). However, the impact of the COVID-19 pandemic is massive, and all organizations are still recovering from the global crisis. Therefore, exploring the relationship between digital transformation and firm performance in developing or developed countries is important.

Based on the synthesis of previous research findings, the researchers conclude that digital transformation research is multidisciplined and still developing. However, there is limited research on how family businesses in emerging countries like Indonesia digitally transformed using established theory in digital transformation. Therefore, the researchers attempt to replicate the conceptual model from Martínez-Caro in the context of the Indonesian family business. Our research objective is to examine the determinant factors of business performance mediated by business digitalization and digital technology value development. Our research will benefit practitioners and academicians in the family business to understand the importance of organization digital culture, business digitalization, and digital technology value development for improving business performance.

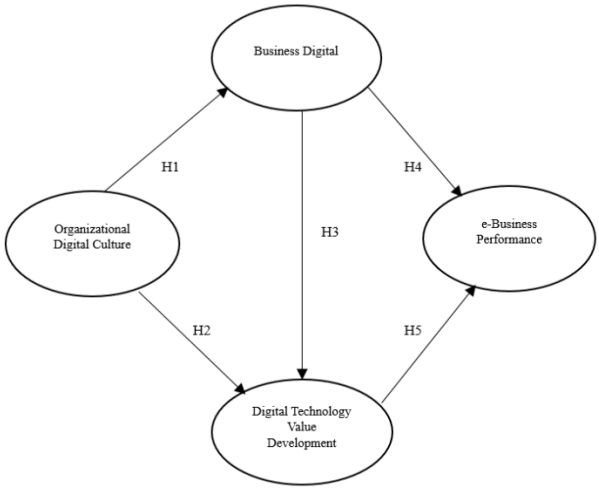

Fig. 1. Research Model

2. Literature Review

Digital transformation in the family business context

Digital transformation refers to a change process by organizations adopting digital technology to change organizational culture, business processes, and better customer experience to improve company performance (Gamage, 2022). The family business is a compound organization with the capability to face future challenges and hand over the business to the next generation. In the digital age, family business needs the capability to leverage the value of emerging technology. Business digitalization is a transformation journey that affects businesses caused by internal and external issues and requires emerging technology to solve that issue. Therefore, digitalization is not only setting up or adopting emerging technology but also requires time and radical process transformation on core business. Finally, the family business owner needs to develop their digital culture to fully benefit from digitalization in their business process and improve the business performance.

According to the existing literature, there is a scarcity of research on the subject of digital transformation in the context of family businesses. The aforementioned study looked at the relationship between digital transformation and dynamic capabilities, and the resilience of micro, small, middle, and enterprise (MSME) bookkeeping in Indonesia during the pandemic. (Putritamara et al., 2023). The result shows that digital transformation is important for business resilience in micro, small, and medium family businesses. Previous research also supported the findings that SMEs need to develop their collaboration capability and innovation value (Sulastri et al., 2023). Enhancing the efficacy of digital transformation can be achieved through fostering

partnerships between governmental entities and academic institutions, hence facilitating the development of digital literacy and skills. (Anatan & Nur, 2023). The previous study also investigates the phenomena of family business resilience in Germany using a qualitative approach (Schulze & Bövers, 2022). The result shows that the family business owner goes through a period of reach, adaptation, and consolidation in crises. Moreover, the researchers identify personal, business, and relational resilience as dimensions of family business resilience.

The important mechanism for family businesses to adapt to major disruption are exploring new opportunities or innovative ways to operate their business, strengthening the culture, and adopting emerging technology to solve business problems (Alonso et al., 2019). In order to cultivate organizational agility, facilitate successful technology adoption, and encourage creative business models, it is imperative for leaders in small and medium-sized enterprises (SMEs) to cultivate digital transformation leadership skills. (Ramadan et al., 2023). Therefore, dynamic capability and knowledge acquisition should become a paradigm for the family business owner to overcome the uncertainty of the business environment. The digital transformation leadership needs to be internalized in the organizational culture in the face of digital transformation so that the environment becomes familiar with technology and dares to experiment in daily activities (Pradana et al., 2022). In summary, several studies have explained family business digitalization from different perspectives. However, previous studies have not explained the digital transformation of family business from digital culture, technology adoption, technology value proposition, and its performance.

Sociotechnical Systems Theory

Sociotechnical systems theory is an approach that recognizes that social systems and technology are interrelated and must be considered simultaneously in managing organizations (Leavitt, 1965). This theory emphasizes how the interaction between tasks, people, structure, and technology impacts efficiency, productivity, and quality of work. Sociotechnical systems theory has been applied in industry 4.0 or digital transformation research in the family business context (Pradana et al., 2022; Savytska et al., 2022; Sony & Naik, 2020).

Sociotechnical systems theory can be used as a guideline for designing integrated industry 4.0 architecture (Sony & Naik, 2020). Information system integration must be aligned with the organization's strategy direction. Socio-technical components will help the management to integrate the system within the organization. The management must consider the employee, infrastructure, business process, technology, culture, and organization objectives as social principles of information system integration (Majdalawieh & Khan, 2022). The employees will have different opinions and capabilities to interact with information systems in the organization (Bunjak et al., 2022). Therefore, the organization must consider the social and technical aspects of preparing for Industry 4.0.

Sociotechnical systems theory has been applied to assess an organization's digital maturity and transformation in the FMCG retail segment (Savytska et al., 2022). The researchers found that unmotivated managers, digital mindset, limited digitalization experience, limited financial capability, limited digital skill, and lack of evaluation will slow down the digitalization process. However, the integration between technical and social aspects will assist the success of digital transformation in German SMEs (Prodi et al., 2022). The researchers found that intermediary organizations play important roles in accelerating digital transformation by offering various competencies to help transition in the sociotechnical system.

The empirical studies related to digital transformation using sociotechnical systems theory have been conducted by (Ali et al., 2022; Pradana et al., 2022). Prior studies have demonstrated a good relationship between soft total quality management and hard total quality management. In addition, the implementation of both soft and hard overall quality management practices has a substantial impact on the level of preparedness for industry 4.0 inside the manufacturing businesses of small and medium enterprises (SMEs) in Malaysia (Ali et al., 2022). The previous research found that digital organizational culture enhances Indonesian state-owned companies by aligning business strategy and technology adoption for organizational value creation (Pradana et al., 2022).

The role of top management commitment (Ali et al., 2022), digital organizational culture (Pradana et al., 2022), and customer focus (Ali et al., 2022) are important factors of social systems. Furthermore, digital technology value development (Pradana et al., 2022), process management (Ali et al., 2022), business digitalization (Pradana et al., 2022), quality information and analysis (Ali et al., 2022), and advanced manufacturing technology (Ali et al., 2022) are important factors of the technical system. Therefore, social and technical practice must be integrated for the success of digital transformation.

Hypothesis development

Organizational digital culture as an exogenous variable

Organizational digital culture refers to a collection of values and beliefs pertaining to digital innovation and transformation within an organization. These values and beliefs are identified via the process of learning and are aimed at addressing challenges related to external adaption and internal integration (Martínez-Caro et al., 2020). The organizational digital culture adaptation characteristics in the digital era can be observed through the top management initiative for cultural change using collaborative technology (Imran et al., 2021). Moreover, the internal stakeholder can facilitate the change process by developing concepts using a prototype approach using emerging communication technology (Leal-Rodríguez et al., 2023). Those efforts might reduce the issue related to traditional organizational culture, which the employee might resist or take it for granted (Grover et al., 2022). Therefore, the digital culture needs to be socialized to all employees to have the right perceptions, mindsets, and feelings to adapt to an uncertain environment (Trenerry et al., 2021).

Previous research that examines the relationship between organizational digital culture and business digitalization is limited (Xanthopoulou et al., 2023). Emerging technology and innovative business ideas force organizations to adapt (Alonso et al., 2019). Therefore, how the organization leverages emerging technology is important to establish new digital business models that create and add value to its stakeholders (Ramadan et al., 2023). Organizational culture and digital strategy are the key factors of successful digital transformation. Therefore, organizations might collaborate with government or university to improve their employees' digital skills (Anatan & Nur, 2023; Xanthopoulou et al., 2023). When digital culture is immersed in the organization, the employee will become open to change, cooperative, data-driven decision-making, customer-oriented, learning-oriented, and risk tolerance (Leal-Rodríguez et al., 2023). These aforementioned attributes will facilitate the ability of enterprises to effectively respond to prevailing issues and proactively equip themselves for forthcoming disruptions (Bennett & McWhorter, 2021).

Therefore, the following hypothesis is proposed:

H_1: Organizational Digital Culture Positively Affects Business Digitalization

The current study predominantly focuses on the decision-making of senior management in adopting emerging information systems to facilitate their business operations and accomplish their organizational vision (Effendi et al., 2020; Qi et al., 2023; Trenerry et al., 2021). In the Industry 4.0 era, top-level management must undertake a business transformation incorporating and integrating emerging technology (Bunjak et al., 2022). Digital transformation pertains to how organizations must allocate financial and non-financial resources toward digital technologies to facilitate business operations (Bouncken & Schmitt, 2022). The propensity for top management to exploit a technology rises when their values align with the values inherent in the technology or those linked to its creation (Verhoef et al., 2021). Hence, the advancement of the digital technology value proposition can be seen as the capacity of organizations to generate value by leveraging digital technology (Pradana et al., 2022). Ultimately, the researchers assert that a comprehensive analysis of the dissemination of digital technology is necessary, as it encompasses a multifaceted progression commencing with initial adoption and extending toward the generation of value (Martínez-Caro et al., 2020).

The implementation of digital technology necessitates acquiring novel information to foster innovation, facilitate decision-making processes, enhance service quality for customers, optimize coordination with suppliers, and redefine operational procedures to achieve optimal efficiency(Pradana et al., 2022). Researchers proposed that organizations acknowledged for their

proficiency in leveraging digital technology frequently emphasize their organizational culture (Leal-Rodríguez et al., 2023). The actions, regulations, and procedures implemented by top management play a crucial role in establishing a culture of digitization that fosters innovative thinking and creativity, ultimately leading to the cultivation of technological value (Leso et al., 2023). Nevertheless, it is imperative to cultivate a digital culture that guides people and teams inside organizations toward sharing and generating knowledge to utilize the technology effectively. The presence of a digital culture within an organization might potentially influence the behavior of its members, resulting in their acceptance of digital technologies as valuable assets for business (Gfrerer et al., 2021). additionally, this digital culture can foster a sense of dedication toward utilizing the technology (Solberg et al., 2020).
Therefore, the following hypothesis is proposed:
H_2: Organizational Digital Culture positively affects Digital Technology Value Development

The Importance of Business Digitalization and Digital Technology Value Development

In the volatile and uncertain business world, digitalization is reshaping the business process in organizations and how value is created (Un Nabi & Masroor, 2022). The transformation occurs across all business functions by implementing digital technology (Anatan & Nur, 2023). Business digitalization has a profound impact on digital technology value development. Digitalizing business operations entails streamlining business processes, task automation, and real-time data access (Javaid et al., 2022). These developments substantially impact the firm's efficiency and productivity (Schwarzmüller et al., 2018). Technology implementation is closely linked to the value proposition of digital technology (Martínez-Caro et al., 2020).

Moreover, digitalizing business operations generates substantial volumes of data (Ribeiro-Navarrete et al., 2021). Using operation data can enhance decision-making(Lutfi et al., 2023). Therefore, data-driven decision-making is important in advancing digital technology value creation. The top management can formulate well-informed decisions and efficiently respond to market uncertainty (Iranmanesh et al., 2023). Digitalization also helps the top management customize their interaction with stakeholders and will give competitors a competitive advantage (Ramadan et al., 2023).

Finally, digitalization enhances the company's agility and adaptability (Ramadan et al., 2023). Top management who can align between business and digital strategy will gain a competitive advantage and profoundly impact business sustainability (Lutfi et al., 2023). Organizations adopting and integrating emerging technology will enhance their preparedness for future challenges and opportunities (Jalo et al., 2022). It will require the necessary skills and capabilities to adjust to business disruption and changes in customer behavior effectively (Solberg et al., 2020).
Therefore, the following hypothesis is proposed:
H_{3a}: Business Digitalization mediates the relationship between organizational digital culture and business performance.
$H_{3b:}$ Digital Technology Value Development mediates the relationship between organizational digital culture and business performance.

Business Performance as Outcome

Previous research attempts to demonstrate that digital technologies positively impact organizational performance (Martínez-Caro et al., 2020; Pradana et al., 2022). Our research focuses on how digital technologies can influence performance from business digitalization and digital technology value development. Enhanced corporate digitalization has the potential to yield advantages for businesses in terms of cost reduction, heightened connectedness, enhanced flexibility, and improved adaptation within a progressively intricate and competitive landscape (Martínez-Caro et al., 2020). Companies can gain a competitive edge by effectively leveraging their talent across diverse geographical locations through internet connectivity and the extensive array of digital tools at their disposal (Trenerry et al., 2021). Moreover, digital technologies could enhance operations and customer experience by enabling customers to find detailed information online (Gao et al., 2021).

Previous research attempts to demonstrate that digital technologies positively impact organizational performance (Imran et al., 2021; Lutfi et al., 2023; Martínez-Caro et al., 2020). Our research focuses on how digital technologies can influence performance from business digitalization and digital technology value development (Martínez-Caro et al., 2020; Pradana et al., 2022). Enhanced corporate digitalization has the potential to yield numerous advantages for enterprises, including but not limited to cost reduction, heightened connectedness, enhanced flexibility, and improved adaptation within an increasingly intricate and competitive landscape (Moghrabi et al., 2023). Companies can leverage their human resources more effectively by utilizing the Internet and a wide variety of digital tools, enabling employees to work across various geographical locations (Grab et al., 2019; Trenerry et al., 2021). Finally, the researchers conclude that business digitalization offers various values added to the organization's performance in many sectors.

The correlation between a company's capacity to generate value through technological innovation and its overall performance is unquestionable (Martínez-Caro et al., 2020). CEOs frequently engage in discussions regarding the strategic significance of digital technologies and their potential to be leveraged for attaining a competitive edge (Chaudhuri et al., 2022). The process of digital technology value development involves the generation of new perspectives and outcomes through the integration of existing and newly obtained knowledge, and the subsequent incorporation of transforming expertise into the operations of a firm (Pradana et al., 2022). In the era of big data, businesses harnessing digital technologies to collect, analyze, and act upon data will improve the quality of decisions (Iranmanesh et al., 2023). The digital transformation required business process reengineering and organization structure redesign (Kaberova, 2022). Firm performance is no longer simply a measure of financial metrics; it increasingly reflects an organization's digital prowess and ability to create and deliver value in the digital age (Ribeiro-Navarrete et al., 2021).

Business digitalization can yield operational benefits for firms, but the growth of digital technology value can also offer strategic advantage (Martínez-Caro et al., 2020). The digital technology value development process generates novel insights and outcomes by integrating current and newly acquired information (Pradana et al., 2022). The knowledge transformation is incorporated into the operational practice of an organization, facilitating innovation and strategic adaptability (Bhatta et al., 2023). The utilization of digital technologies can yield various benefits, including but not limited to enhanced decision-making, increased employee autonomy, improved organizational efficiency, superior service quality, and product development through business process reengineering and organizational restructuring (Kaberova, 2022). Furthermore, the growth of digital technology holds significant value in providing supplementary strategic benefits (Tsou & Chen, 2023). The alignment of IT and business strategy encompasses the ability to formulate effective strategies, build successful marketing campaigns, analyze the competitive environment, and craft intelligent business plans. Thus, it will increase the business performance (Hautala-Kankaanpää, 2022).

Therefore, the following hypothesis is proposed:

H_3: Organizational Digital Culture Positively Affects Business Performance

H_4: Business Digitalization Positively Affects Business Performance

H_5: Digital Technology Value Development Positively Affects Business Performance

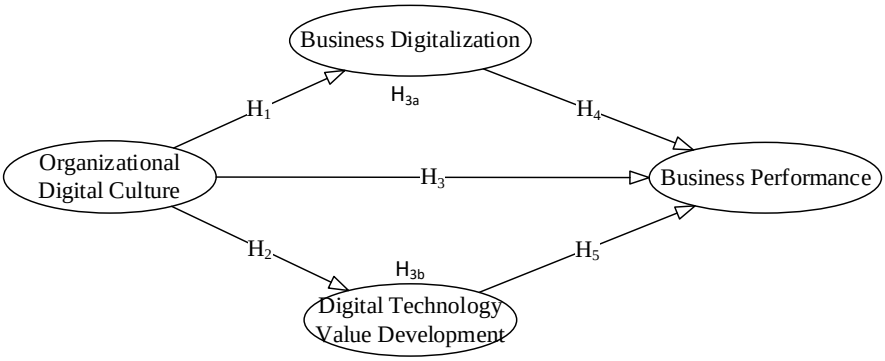

Fig. 1. Conceptual Model

3. Research Methods

Structural equation modeling (SEM), especially in SmartPLS 4.0.8.5, is a well-known and often-used way to analyze data in behavioral science (Hair Jr et al., 2016). SmartPLS can analyze user behavior and psychological state data (Hair Jr et al., 2016). PLS-SEM is more robust to the indicator properties of multicollinearity and distributional variation. PLS can address these two constraints of multiple regression since it is nonparametric.

The researchers could not determine the population size because there is no official data regarding the number of family businesses in Indonesia. Therefore, the sampling method is convenience sampling. One of the primary drawbacks associated with convenience sampling is the potential for self-selection bias, which may undermine the validity of the findings. Additionally, the lack of generalizability is another notable restriction of this sampling method. The self-selection bias may appear in the sample due to the difficulties in recruiting family business owners or mid-level managers willing to share their business performance and digital technology adoption. Therefore, the researchers inform the candidate that the survey is voluntary and inform the summary of the research and its criteria. The respondent criteria are family business owners or middle management who recently adopted an emerging technology to improve their business performance. The questionnaire is distributed to researchers' networks using email, WhatsApp, and social media.

The researcher employed G-Power analysis for the sample size determination method because it can control the type 1 error probability α and type 2 error probability β (Mayr et al., 2007). G-Power analysis is a robust freeware program for determining sample size in digital transformation research (Lee et al., 2022). The researchers selected t-test in test family, linear multiple regression: fixed model, single regression coefficient in statistical test and a priori: compute required sample size – given alpha, power, and effect size in the type of power analysis (Mayr et al., 2007). Next, the researchers input the following parameters: the tail is one tail, the effect size is 0.15, the alpha value is 0.05, the power value is 0.80, and the number of predictors is 3 (Fareed et al., 2016). Based on the calculation, the sample size is 43 samples.

This study adopted the measurement items of organizational digital culture, business digitalization, digital technology value development, and business performance from previous research (Martínez-Caro et al., 2020). There are 13 indicators to measure all variables, and was measured using a seven-point Likert scale (ranging from strongly disagree (1) to strongly agree (7). The researchers translated the questions from previous research into Indonesia under the supervision of an Indonesian researcher fluent in English. The study used a cross-sectional approach. The online survey approach is robust and widely used in quantitative research to validate theories or models in digital strategy research.

The researchers conducted a pilot study to ensure the face and content validity of the questionnaire (Haws et al., 2023). The initial questionnaire draft was evaluated by research methodology and publication faculty, three industry experts, and one Ph.D. scholar in digital transformation. A pilot study aims to assess the quality of the questionnaire and identify the potential issues related to overall structure, language clarity, ambiguity, and format. Based on the feedback from the experts, the researchers adjusted the understandability of questions so that terminology errors caused the respondent's misunderstanding.

After the questionnaire was finalized, the researchers distributed the questionnaire through the researchers' network and recruited 35 respondents of family business owners, top management, and mid-level management. We analyze the preliminary internal consistency based on respondents who pass the criteria. The pilot testing shows satisfactory internal consistency reliability results for all constructs. The Cronbach's α ranges between 0.822 and 0.897, composite reliability (CR) ranges between 0.894 and 0.928, and Dijkstra Henseler's rho (ρA) ranges between 0.827 and 0.916. Since the previous scale only presents the composite reliability value ranges between 0.753 and 0.871 (Martínez-Caro et al., 2020). Therefore, we conclude that the questionnaire can be used for primary investigation.

The researchers proposed the conceptual model using a reflective model (Hair et al., 2021). Therefore, the data will be assessed using internal consistency, factor reliability, convergent validity, and discriminant validity (Sarstedt et al., 2022). After completing the confirmatory factor

analysis stage and meeting the criteria, the researchers assess the structural model and its hypothesis (Sarstedt et al., 2022). Finally, the researchers ran the PLS-Predict to assess the predictive power based on the proposed model (Shmueli et al., 2019). The detailed protocol will be explained in the results and discussions.

4. Results and Discussions

Data Screening and Common Method Bias

Before conducting the data analysis using Smart PLS, the researchers screened data by eliminating unengaged respondents (Gaskin, 2012). the researchers removed two respondents due to a straight-lining answer. Next, the researchers perform common method bias using a full multicollinearity method with a cut-off value below 3.3 (Kock, 2015). The results displayed that the VIF value was between 1.167 and 2.375. Therefore, the researchers conclude that there is no indication of common method bias.

Table 1 – Common Method Bias Test (Full VIF)

	BD	BP	DTVD	ODC
Business digitalization (BD)		2.060	1.879	1.770
Business Performance (BP)	1.319		1.167	1.308
Digital Technology Value Development (DTDV)	2.231	2.197		2.065
Organizational Digital Culture (ODC)	1.945	2.375	1.934	

Descriptive Analysis of Respondent Profile

Table 1 shows the descriptive analysis of the respondent profile. Most respondents in this survey were between 27 and 34 years old (67.5%). Most respondents were managers (40%), followed by the owner (32.5%), director (22.5%), and commissioner (5%). Based on the type of business, most of our respondents work in the food and beverage industry (17.5%), financial services (agents, brokers, etc.) (20%), retail (18%), manufacturing (15%), and other industries. The business demographics are mostly DKI Jakarta (47.5%) and West Java (35%). Most respondents' businesses are small (55%), medium (22.5%), and large (22.5%) in size.

Table 2 - Descriptive Analysis of Respondent Profile

Item	N	%	Item	N	%
Age			Business Scale (employees)		
27-35	28	70.0%	Small (5-19)	22	55.0%
36-50	10	25.0%	Medium (20-99)	9	22.5%
> 50	2	5.0%	Big (> 100)	9	22.5%
Business Domicile			Type Of Business		
DKI Jakarta	19	47.5%	Food & Beverages	7	18.0%
West Java	14	35.0%	Financial Services	8	20.0%
Banten	3	7.5%	Manufacture	6	15.0%
Others	4	10.0%	Retail	7	18.0%
Respondent Position			Services	4	10.0%
Manager	16	40.0%	Others	8	19.0%
Owner	13	32.5%			
Director	9	22.5%			
Commissioner	2	5.0%			
*N=40					

Confirmatory Factor Analysis

Table 3 - Descriptive Analysis and Confirmatory Factor Analysis

Variable and Items	Loading	Mean	AVE	Composite Reliability
Organizational Digital Culture (ODC)				
The teams collaborate functionally in the initiatives for innovation and digital transformation (ODC1)	0.896	5.860	0.760	0.927
There is a clear orientation to digital technology changes inside the company's culture (ODC2)	0.906	5.744		
The culture of digital innovation and change takes part as a natural process within the Company (ODC3)	0.778	5.512		

The organization shares with the staff the digital strategy, taking into consideration their suggestions (ODC4)	0.901	5.465		
Business Digitization (BD)				
The information systems of your organization generate data in real-time along the value chain (information from machinery or processes) (BD1)	0.831	5.070	0.780	0.914
There is a high degree of traceability of information during the production process of your company (BD2)	0.908	5.093		
The level of quality of the information generated by the information systems of your organization is high (BD3)	0.908	5.256		
Digital Technology Value Development (DTVD)				
The information systems of your organization generate data in real-time along the value chain (information from machinery or processes) (BD1)	0.819	5.372	0.730	0.890
Has defined how to assign data a central role in decision-making and business management (DTVD2)	0.896	5.047		
Uses an open digital platform to implement innovative new ideas to support business activities quickly (DTVD3)	0.846	5.372		
Business Performance (BP)				
It is growing more (BP1)	0.888	6.116	0.760	0.890
It is more profitable (BP2)	0.940	5.977		
It has higher productivity (BP3)	0.767	6.302		

Researchers utilized factor loading thresholds of 0.7 (Sun et al., 2022), Average Variance Extracted (AVE) thresholds of 0.5, and Critical Ratio (CR) thresholds of 0.8 (Al-Adwan et al., 2022). Table 3 shows the discriminant validity test results. The researchers used the HTMT criterion for assessing discriminant validity. The cut-off value is ≤ 0.90, and all the variables fulfill the criteria.

Table 4 - Discriminant Validity Test - HTMT value

Variable	1	2	3	4
1 Business digitalization				
2 Business performance	0.372			
3 Digital Technology Value Development	0.789	0.573		
4 Organization digital culture	0.764	0.394	0.802	

Hypothesis Testing

In PLS, the bootstrapping method determines the path coefficient magnitude, and 5,000 bootstrap samples were made. With a 5% margin of error, the t and p values are used to determine if the regression coefficient values are statistically significant. For the hypothesis to be accepted, the 5% significance threshold requires that the p-value be less than 0.05 and the value more than 1.65 (Pradana et al., 2022). The intervals for the f^2 statistic, which assesses the contribution of external factors to endogenous variables, are as follows: strong effect ($f^2 > 0.350$), medium effect ($f^2 > 0.150$), and small influence ($f^2 > 0.020$). The researchers also use a combination of criteria, such as p-values and effect sizes, to better understand the findings.

The coefficient of determination (R^2) shows how well an outside factor can explain an inside factor. R^2 is anticipated to fall between 0 and 1. R Square values of 0.75, 0.50, and 0.25 mean that the model is robust, moderate, or not good enough (Hair Jr et al., 2016). The hypothesis testing and coefficient of the determinant are shown in Table 4. The R^2 for company performance is 24.2 percent, the R^2 for business digitization is 46 percent, and the R^2 for DTVD is 49.3 percent.

Table 5 - Hypothesis Testing Result

Path	β	STDEV	T Value	P Values	F2
H_1 ODC - BD	0.679	0.106	6.414	0.000	0.853
H_2 ODC - DTVD	0.702	0.118	5.935	0.000	0.970
H_3 ODC - BP	0.028	0.349	0.079	0.469	0.000
H_4 BD - BP	0.008	0.238	0.033	0.487	0.000
H_5 DTVD - BP	0.467	0.190	2.454	0.007	0.129
H_{3a} ODC – BD - BP	0.005	0.017	0.031	0.488	
H_{3b} ODC – DTVD - BP	0.328	0.162	2.028	0.021	

Note: R^2 Business performance: 24.2%
R^2 Business digitalization: 46%
R^2 Digital technology value development: 49.3%

The hypothesis testing results show that digital technology's value development affects business performance (β= 0.467; p-value = 0.007; medium effect). Moreover, organizational digital culture impacts business digitalization (β = 0.679; p-value = 0.000; strong effect) and digital technology value development (β = 0.;702; p-value = 0.000; strong effect). Finally, the mediation analysis of digital technology value development between organizational digital culture and business performance is accepted (β = 0.328; p-value = 0.021). However, the study found that the relationship between business digitalization and business performance (H_4), organizational digital culture and business performance (H_3), and organizational digital culture and business performance that is mediated by business digitalization ($H3_a$) is insignificant.

The final process in evaluating the structural model involves examining its predictive power through PLS Predict (Shmueli et al., 2019). The methodology employed in this study involves using a 10-fold cross-validation approach with ten repeats as the experimental configuration. The PLS model's Mean absolute error (MAE) value must be lower than the linear regression model (LM) to have strong predictive capabilities. If all indicators of Δ PLS-LM show negative value, then the model can be considered to possess a high level of predictive capability. Conversely, if most indicators of Δ PLS-LM show a negative value, then the model can be considered to have a moderate level of predictive capability. Lastly, if the minority of indicators of Δ PLS-LM show negative value, then the model can be considered to have low predictive capability. Table 6 shows the result of PLS Predict. The researchers conclude that BP1 and BP2 have a negative value of Δ PLS-LM. This finding suggests that the model possesses a moderate level of predictive capability.

Table 6 – PLS Predict

	Q^2predict	PLS-SEM_MAE	LM_MAE	Δ PLS-LM
BP1	-0.052	0.972	0.995	-0.023
BP2	-0.07	0.956	1.007	-0.051
BP3	-0.103	0.689	0.687	0.002

Our findings established that business performance is positively affected by digital technology value development (H_5 accepted), and it is in line with previous studies (Martínez-Caro et al., 2020; Pradana et al., 2022; Ribeiro-Navarrete et al., 2021). The researchers conclude that family business owners who invest in e-commerce, digital marketing, or business process automation will increase their business performance (Bhatta et al., 2023). The family business owner needs to conduct a cost-benefit analysis to assess the technology development and implementation to accelerate business performance (Chaudhuri et al., 2022). Moreover, the IT department or IT consultant must help the business owner conduct a fit-gap analysis between the business needs and application capabilities (Van Looy, 2021). It is important to ensure the IT solution meets the business problems and reduces user resistance during the implementation.

Next, the relationship between business digitalization and business performance is not significant (H_4 Rejected), and it is contradictory with previous studies (Kaberova, 2022; Martínez-Caro et al., 2020; Ribeiro-Navarrete et al., 2021). The researchers conclude that business digitalization cannot directly affect business performance. Family business owners need to realize the value of digital technology development before starting the digital transformation in their business (Bouncken & Schmitt, 2022). Therefore, identifying the value of technology is an important step for digital transformation (Verhoef et al., 2021). The family business owner might lose investment and reduce the business performance if they fail to implement the technology

Next, the researchers found that the relationship between organizational digital culture and business performance is insignificant (H_3 rejected). This finding contradicts previous studies (Grover et al., 2022; Leso et al., 2023; Pradana et al., 2022). The researchers conclude that organizational digital culture cannot directly affect business performance. The family business owner needs to encourage their employee to be innovative, open-minded, and curious about emerging technology that might help to improve their business performance (Schulze & Bövers, 2022). Therefore, the organization's culture must accommodate the employee initiative to solve

the business problem creatively and innovatively (Martínez-Caro et al., 2020). The top management needs to provide room for employees who want to apply the concept of trial and error when adopting emerging technology (Pradana et al., 2022). If there is a failure in execution, it is necessary to conduct an audience to identify lessons learned and strategies to prevent repeated failures. However, if technology implementation is successful, it needs to be appreciated by company leaders (Leal-Rodríguez et al., 2023). This can foster a new organizational culture in the era of digitalization.

Lastly, the researchers found that organizational digital culture positively affects business digitalization (H_1 accepted) and digital technology value development (H_2 accepted). Moreover, the mediation analysis found that business digitalization plays an intermediary variable between organizational digital culture and business performance (H_{3a} accepted). This finding aligns with previous studies (Leal-Rodríguez et al., 2023; Leso et al., 2023; Martínez-Caro et al., 2020). The researchers conclude that organizational digital culture is important for business digitalization. Family businesses developing their digital culture can help employees adopt the technology (Leso et al., 2023). Family business who has business strategic and information technology strategic alignment can deal with digital transformation more seamlessly (Tsou & Chen, 2023). Finally, family business owners who communicate clear direction to their employees will have a higher chance of successfully implementing new technology to solve business problems (Sony & Naik, 2020).

5. Conclusion

This study was conducted to examine the determinant factors of business performance that are mediated by business digitalization and digital technology value development. The findings show that four of seven hypotheses are accepted. Interestingly, organizational digital culture has proven to be a significant variable that affects business digitalization and digital technology value development. Moreover, digital technology value development mediates the relationship between organizational digital culture and business performance.

According to current literature, the use of classical theories regarding technology adoption is still diverse and not definitive in explaining the phenomenon of digital transformation, especially in the context of family business. Our study has explored sociotechnical systems (STSP theory) theory, which combines social and technical aspects to explain digital transformation quantitatively. The results of this study prove that social aspects (i.e., organizational digital culture and digital technology value development) are important things that need to be considered by academics and practitioners in the field of digital transformation. Therefore, the success of digital transformation needs to pay attention to social and technical aspects to implement new technologies that will affect company performance successfully.

The first managerial implication of this study relates to the development of digital culture within family business. Family businesses need to consider the importance of a digital culture that is responsive to new emerging technologies. Top management needs to assess how the technology can improve company performance and employee readiness to understand the value offered by the technology. This is very important so that companies and teams can integrate in their business activities in a fast time.

The second managerial implication of this study relates to the change management strategy and employee empowerment in the family business. Implementing new technologies and digital cultural changes in family businesses requires effective change management. Top management must have a clear plan to manage these changes and ensure involvement from all parts of the digital transformation process. Top management must prepare training, recognition, and rewards for employees participating in digital transformation initiatives.

The last managerial implication of this study relates to risk management and investment evaluation of technology. The family business owners realize the benefit of emerging technology adoption and improve their business performance. Family businesses that adopt e-commerce and digital marketing could increase their market share and revenue. Moreover, the COVID-19 pandemic also changed customer behavior using payment technology, such as Quick Response Code Indonesian Standard (QRIS), mobile payment, and e-wallet. Adopting payment technology

will reduce the risk related to financial crime and fraud. Finally, top management must understand how to evaluate the digital transformation to benefit the business performance.

Finally, our study has some limitations, and we also offer the future direction to accommodate it. First, the researchers employed convenience sampling; the respondents were from our network. Therefore, our findings may not represent the digitalization of family business in Indonesia, although the respondents were diverse in age and type of business. The future study could use other sampling strategies or statistical analysis to detect potential bias when using convenience sampling. Second, the researchers did not focus on specific family business industries or business scales. Therefore, our findings may differ because of the different nature of technology adopted in specific business or business scale types. Future research should replicate the study in a specific business type or scale. Third, the researchers only use the Sociotechnical Systems Theory to explain the family business digital transformation. Therefore, the coefficient of determination shows medium variation. Future studies could use other strategic management and technology adoption theories to explain digital transformation. The researchers suggest integrating institutional theory, innovation theory, business model innovation theory, or leadership theory.

Acknowledgment
We thank Binus University for their funding of the article publication

References

Ainurrofiq, I., & Amir, M. T. (2023). Application of e-Culture in a Hybrid Working Model: A Case Study in the Banking Industry in Indonesia. *International Journal of Interdisciplinary Organizational Studies*, *18*(2), 93–115. https://doi.org/10.18848/2324-7649/CGP/v18i02/93-115

Ali, K., Johl, S. K., Muneer, A., Alwadain, A., & Ali, R. F. (2022). Soft and Hard Total Quality Management Practices Promote Industry 4.0 Readiness: A SEM-Neural Network Approach. *Sustainability (Switzerland)*, *14*(19). https://doi.org/10.3390/su141911917

Alonso, A. D., Kok, S., & O'Shea, M. (2019). The family business, adversity and change: A dynamic capabilities and knowledge-based approach. *Journal of General Management*, *44*(2), 96–109. https://doi.org/10.1177/0306307018810585

Anatan, L., & Nur. (2023). *Micro, Small, and Medium Enterprises' Readiness for Digital Transformation in Indonesia*. https://doi.org/10.3390/economies

Bennett, E. E., & McWhorter, R. R. (2021). Virtual HRD's Role in Crisis and the Post Covid-19 Professional Lifeworld: Accelerating Skills for Digital Transformation. *Advances in Developing Human Resources*, *23*(1), 5–25. https://doi.org/10.1177/1523422320973288

Bhatta, D. D., Sarfraz, M., Ivascu, L., & Pislaru, M. (2023). The Nexus of Corporate Affinity for Technology and Firm Sustainable Performance in the Era of Digitalization: A Mediated Model. *Sustainability (Switzerland)*, *15*(12). https://doi.org/10.3390/su15129765

Bouncken, R., & Schmitt, F. (2022). SME Family Firms and Strategic Digital Transformation: Inverting Dualisms Related to Overconfidence and Centralization. *Journal of Small Business Strategy*, *32*(3), 1–17. https://doi.org/10.53703/001c.35278

Bunjak, A., Bruch, H., & Černe, M. (2022). Context is key: The joint roles of transformational and shared leadership and management innovation in predicting employee IT innovation adoption. *International Journal of Information Management*, *66*, 102516. https://doi.org/10.1016/J.IJINFOMGT.2022.102516

Chaudhuri, A., Subramanian, N., & Dora, M. (2022). Circular economy and digital capabilities of SMEs for providing value to customers: Combined resource-based view and ambidexterity perspective. *Journal of Business Research*, *142*, 32–44. https://doi.org/10.1016/J.JBUSRES.2021.12.039

Effendi, M. I., Sugandini, D., Istanto, Y., Arundati, R., & Adisti, T. (2020). *The Technology–Organization–Environment Framework: Adopsi Teknologi Pada UKM* (Darisman, Ed.; Issue November). Zahir Publishing.

Fareed, M., Isa, M. F. M., & Noor, W. S. W. M. (2016). Human Resource Professionals' Effectiveness, Organizational Culture and High Performance Work System Link: Evidence

from Pakistan. *International Review of Management and Marketing*, *6*(7), 335–344. https://dergipark.org.tr/en/pub/irmm/issue/32101/355666

Furjan, M. T., Tomičić-Pupek, K., & Pihir, I. (2020). Understanding Digital Transformation Initiatives: Case Studies Analysis. *Business Systems Research*, *11*(1), 125–141. https://doi.org/10.2478/bsrj-2020-0009

Gamage, T. C. (2022). The Journey Towards Harnessing Frontier Technologies: Becoming a Digital Firm With Digital Capability and Dexterity. In *Promoting Inclusivity and Diversity Through Internet of Things in Organizational Settings* (pp. 60–81). IGI Global. https://doi.org/10.4018/978-1-6684-5575-3.CH004

Gao, W., Fan, H., Li, W., & Wang, H. (2021). Crafting the customer experience in omnichannel contexts: The role of channel integration. *Journal of Business Research*, *126*, 12–22. https://doi.org/10.1016/J.JBUSRES.2020.12.056

Gaskin, J. (2012). *SEM Series Part 2: Data Screening - YouTube*. https://www.youtube.com/watch?v=1KuM5e0aFgU

Gfrerer, A., Hutter, K., Füller, J., & Ströhle, T. (2021). Ready or Not: Managers' and Employees' Different Perceptions of Digital Readiness. *California Management Review*, *63*(2), 23–48. https://doi.org/10.1177/0008125620977487

Grab, B., Olaru, M., & Gavril, R. (2019). Self-Managed Teams as a Key to Unlocking Digital Transformation in Business Management. *Quality Access to Success*, *20*(2), 280–286.

Grover, V., Tseng, S. L., & Pu, W. (2022). A theoretical perspective on organizational culture and digitalization. *Information & Management*, *59*(4), 103639. https://doi.org/10.1016/J.IM.2022.103639

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. SAGE Publication. https://us.sagepub.com/en-us/nam/a-primer-on-partial-least-squares-structural-equation-modeling-pls-sem/book270548

Hautala-Kankaanpää, T. (2022). The impact of digitalization on firm performance: examining the role of digital culture and the effect of supply chain capability. *Business Process Management Journal*, *28*(8), 90–109. https://doi.org/10.1108/BPMJ-03-2022-0122

Haws, K. L., Sample, K. L., & Hulland, J. (2023). Scale use and abuse: Towards best practices in the deployment of scales. *Journal of Consumer Psychology*, *33*(1), 226–243. https://doi.org/10.1002/jcpy.1320

Imran, F., Shahzad, K., Butt, A., & Kantola, J. (2021). Digital Transformation of Industrial Organizations: Toward an Integrated Framework. *Journal of Change Management*, *21*(4), 451–479. https://doi.org/10.1080/14697017.2021.1929406

Iranmanesh, M., Lim, K. H., Foroughi, B., Hong, M. C., & Ghobakhloo, M. (2023). Determinants of intention to adopt big data and outsourcing among SMEs: organisational and technological factors as moderators. *Management Decision*, *61*(1), 201–222. https://doi.org/10.1108/MD-08-2021-1059/FULL/PDF

Jalo, H., Pirkkalainen, H., Torro, O., Pessot, E., Zangiacomi, A., & Tepljakov, A. (2022). Extended reality technologies in small and medium-sized European industrial companies: level of awareness, diffusion and enablers of adoption. *Virtual Reality*, *26*(4), 1745–1761. https://doi.org/10.1007/S10055-022-00662-2/TABLES/6

Javaid, M., Khan, S., Haleem, A., & Rab, S. (2022). Adoption of modern technologies for implementing industry 4.0: an integrated MCDM approach. *Benchmarking*. https://doi.org/10.1108/BIJ-01-2021-0017

Kaberova, A. (2022). Restructuring and Reengineering as a Basis for Digitalization of Business Processes of a Telecommunications Operator. *2022 Intelligent Technologies and Electronic Devices in Vehicle and Road Transport Complex, TIRVED 2022 - Conference Proceedings*. https://doi.org/10.1109/TIRVED56496.2022.9965483

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of E-Collaboration*, *11*(4), 1–10. https://doi.org/10.4018/ijec.2015100101

Leal-Rodríguez, A. L., Sanchís-Pedregosa, C., Moreno-Moreno, A. M., & Leal-Millán, A. G. (2023). Digitalization beyond technology: Proposing an explanatory and predictive model

for digital culture in organizations. *Journal of Innovation and Knowledge*, *8*(3). https://doi.org/10.1016/j.jik.2023.100409

Leavitt, H. J. (1965). Applied organizational change in industry: Structural, technological and humanistic approaches. *Handbook of Organizations*. https://www.econbiz.de/Record/applied-organizational-change-in-industry-structural-technological-and-humanistic-approaches-leavitt-harold/10002360285

Lee, K. L., Azmi, N. A. N., Hanaysha, J. R., Alzoubi, H. M., & Alshurideh, M. T. (2022). The effect of digital supply chain on organizational performance: An empirical study in Malaysia manufacturing industry. *Uncertain Supply Chain Management*, *10*(2), 495–510. https://doi.org/10.5267/J.USCM.2021.12.002

Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: a mixed-methods approach. *Cognition, Technology and Work*, *25*(1), 151–179. https://doi.org/10.1007/s10111-022-00714-2

Lutfi, A., Alrawad, M., Alsyouf, A., Almaiah, M. A., Al-Khasawneh, A., Al-Khasawneh, A. L., Alshira'h, A. F., Alshirah, M. H., Saad, M., & Ibrahim, N. (2023). Drivers and impact of big data analytic adoption in the retail industry: A quantitative investigation applying structural equation modeling. *Journal of Retailing and Consumer Services*, *70*. https://doi.org/10.1016/j.jretconser.2022.103129

Majdalawieh, M., & Khan, S. (2022). Building an Integrated Digital Transformation System Framework: A Design Science Research, the Case of FedUni. *Sustainability (Switzerland)*, *14*(10). https://doi.org/10.3390/su14106121

Martínez-Caro, E., Cegarra-Navarro, J. G., & Alfonso-Ruiz, F. J. (2020). Digital technologies and firm performance: The role of digital organisational culture. *Technological Forecasting and Social Change*, *154*. https://doi.org/10.1016/j.techfore.2020.119962

Mayr, S., Erdfelder, E., Buchner, A., & Faul, F. (2007). A short tutorial of GPower. *Tutorials in Quantitative Methods for Psychology*, *3*(2), 51–59. http://www.psycho.uni-duesseldorf.de/aap/projects/gpower.

Moghrabi, I. A. R., Bhat, S. A., Szczuko, P., AlKhaled, R. A., & Dar, M. A. (2023). Digital Transformation and Its Influence on Sustainable Manufacturing and Business Practices. *Sustainability (Switzerland)*, *15*(4). https://doi.org/10.3390/su15043010

Pradana, M., Silvianita, A., Syarifuddin, S., & Renaldi, R. (2022). The Implication of Digital Organisational Culture on Firm Performance. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.840699

Prodi, E., Tassinari, M., Ferrannini, A., & Rubini, L. (2022). Industry 4.0 policy from a sociotechnical perspective: The case of German competence centres. *Technological Forecasting and Social Change*, *175*, 121341. https://doi.org/https://doi.org/10.1016/j.techfore.2021.121341

Putritamara, J. A., Hartono, B., Toiba, H., Utami, H. N., Rahman, M. S., & Masyithoh, D. (2023). Do Dynamic Capabilities and Digital Transformation Improve Business Resilience during the COVID-19 Pandemic? Insights from Beekeeping MSMEs in Indonesia. *Sustainability (Switzerland)*, *15*(3). https://doi.org/10.3390/SU15031760

Qi, P., Xu, C., & Wang, Q. (2023). What Determines the Digital Transformation of SRDI Enterprises?—A Study of the TOE Framework-Based Configuration. *Sustainability*, *15*(18), 13607. https://doi.org/10.3390/su151813607

Ramadan, M., Bou Zakhem, N., Baydoun, H., Daouk, A., Youssef, S., El Fawal, A., Elia, J., & Ashaal, A. (2023). Toward Digital Transformation and Business Model Innovation: The Nexus between Leadership, Organizational Agility, and Knowledge Transfer. *Administrative Sciences*, *13*(8). https://doi.org/10.3390/admsci13080185

Ribeiro-Navarrete, S., Botella-Carrubi, D., Palacios-Marqués, D., & Orero-Blat, M. (2021). The effect of digitalization on business performance: An applied study of KIBS. *Journal of Business Research*, *126*, 319–326. https://doi.org/10.1016/J.JBUSRES.2020.12.065

Sarstedt, M., Hair, J. F., & Ringle, C. M. (2022). "PLS-SEM: indeed a silver bullet"–retrospective observations and recent advances. *Journal of Marketing Theory and Practice*. https://doi.org/10.1080/10696679.2022.2056488

Savytska, N., Zhehus, O., Chmil, H., Uchakova, N., Androsova, T., & Priadko, O. (2022). Applied Research of Digital Readiness of Retails. *WSEAS Transactions on Environment and Development*, *18*, 798–809. https://doi.org/10.37394/232015.2022.18.75

Schulze, M., & Bövers, J. (2022). Family Business Resilience: The Importance of Owner-Manager's Relational Resilience in Crisis Response Strategies. *European Journal of Family Business*, *12*(2), 100–123. https://doi.org/10.24310/ejfbejfb.v12i2.14657

Schwarzmüller, T., Brosi, P., Duman, D., & Welpe, I. M. (2018). How does the digital transformation affect organizations? Key themes of change in work design and leadership. *Management Revue*, *29*(2), 114–138. https://doi.org/10.5771/0935-9915-2018-2-114

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J. H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European Journal of Marketing*, *53*(11), 2322–2347. https://doi.org/10.1108/EJM-02-2019-0189/FULL/XML

Solberg, E., Traavik, L. E. M., & Wong, S. I. (2020). Digital Mindsets: Recognizing and Leveraging Individual Beliefs for Digital Transformation. *Https://Doi.Org/10.1177/0008125620931839*, *62*(4), 105–124. https://doi.org/10.1177/0008125620931839

Sony, M., & Naik, S. (2020). Industry 4.0 integration with socio-technical systems theory: A systematic review and proposed theoretical model. *Technology in Society*, *61*, 101248. https://doi.org/10.1016/J.TECHSOC.2020.101248

Sulastri, S., Mulyadi, H., Disman, D., Hendrayati, H., & Purnomo, H. (2023). Resilience Acceleration Model of Small and Medium Enterprises Through Digital Transformation. *Journal of Eastern European and Central Asian Research*, *10*(4), 609–619. https://doi.org/10.15549/jeecar.v10i4.1355

Sumengkar, A. (2022). *Bangkit Setelah Pandemi: Mengembalikan Kesuksesan Perusahaan Keluarga Setelah Pandemi COVID-19*.

Trenerry, B., Chng, S., Wang, Y., Suhaila, Z. S., Lim, S. S., Lu, H. Y., & Oh, P. H. (2021). Preparing Workplaces for Digital Transformation: An Integrative Review and Framework of Multi-Level Factors. *Frontiers in Psychology*, *12*, 620766. https://doi.org/10.3389/FPSYG.2021.620766/BIBTEX

Tsou, H. T., & Chen, J. S. (2023). How does digital technology usage benefit firm performance? Digital transformation strategy and organisational innovation as mediators. *Technology Analysis & Strategic Management*, *35*(9), 1114–1127. https://doi.org/10.1080/09537325.2021.1991575

Un Nabi, Md. N., & Masroor, I. (2022). Business Model Transformation through Digitalization as an Approach to Facilitate SDG Achievement: A Case of an MNC in Bangladesh in the COVID-19 Context. *Business in the 21st Century*, 143–156. https://doi.org/10.1108/978-1-80382-787-220221012

Van Looy, A. (2021). A quantitative and qualitative study of the link between business process management and digital innovation. *Information & Management*, *58*(2), 103413. https://doi.org/https://doi.org/10.1016/j.im.2020.103413

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. *Journal of Business Research*, *122*, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

Xanthopoulou, P., Antoniadis, I., & Triantari, S. (2023). Managing Public Sector in the Digital Reform Era: Organizational Factors and Their Impact on the Digital Transformation at the Greek Public Administration. *Springer Proceedings in Business and Economics*, 947–962. https://doi.org/10.1007/978-3-031-22749-3_59