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The Role of Digital Technologies in Digital Transformation of Small Businesses

Experiences of Business Owners in Daily Operations, Customer Interaction, Competitiveness and Practical Challenges

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ABSTRACT:

This study explores the experiences of small business owners and their management of digital transformation in the course of their daily business operations with a view to gaining insight into the process of digital transformation particularly focusing on customer interaction, operational effectiveness, competitiveness, and the realities of implementing new digital technologies. Small business owners' experiences of digital transformation have become increasingly significant as digital technology plays a central role in their communication with customers, business operations, and the level of competition. To address the research question, a qualitative research approach has been undertaken and supported by the TOE framework. Data has been collected through semi-structured interviews with 5 owners of small businesses operating in service and retail oriented sectors (salons, online retail, restaurant, jewelry business and cake shop) which was then analyzed using thematic analysis.

The research concluded that small businesses adopt easy- to use digital technologies such as social media platforms, online booking systems, digital payment, communication tool and delivery platform which enable better communication with customers, provide business exposure and improve operational efficiency and competitiveness. The results also indicated that in small businesses, digital transformation process is viewed more as an evolutionary and adaptable process than a formalized strategy and owners have confronted some challenges such as lack of finance and technical skills, time constraints, lack of integration, the never-ending learning and adaptation requirements.

KEYWORDS: Digital transformation; Small businesses; Digital technologies; Technology–Organization–Environment (TOE) framework; Customer experience; Operational efficiency; Organizational challenges; Competitiveness; Innovation.

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1 Introduction

The impact that digital transformation has had on businesses is greater than ever before in terms of how businesses compete, produce and generate revenue (Vial, 2019). Vial (2019) states that "Digital transformation is about using digital technologies to improve business performance and create new ways to add value for both organizations and customers." Additionally, digital transformation is not just about adopting digital technologies, it can include changes in an organization's leadership style, mindset, and day-to-day operating procedures (Kane et al., 2015). Although the phrase "digital transformation" can be seen as being synonymous with implementing digital solutions or platforms, digital transformation can mean making major transformations to an organization's overall strategy, its underlying structure and its culture due to digital technologies (Matt et al., 2015; Vial, 2019). Therefore, while digital transformation does relate to how organizations adopt digital technologies it relates equally to how organizations fundamentally change the way they function and deliver value (Verhoef et al., 2021).

Digital transformation research is becoming increasingly relevant as digital technologies continue to have an ever-increasing influence over the way businesses operate, connect with customers and stay ahead of their competitors in dynamic markets (Verhoef et al., 2021; Vial, 2019). Technological transformation, rising competition and changing customer expectations place heightened pressure on day to day operations of small businesses and call for innovative adaptation by using digital tools and platforms (Nadkarni & Prügl, 2021). Social media, digital payment platforms, online ordering systems, communication apps, and other technologies are becoming a regular part of business operations and customer interactions (OECD, 2021, Verhoef et al., 2021).

There are a number of emerging trends in technology including Cloud Computing, Artificial Intelligence, Big Data, Automation, Internet of Things (IoT), etc (Schwab, 2016) These new technologies are helping businesses develop innovative products and services that will help businesses differentiate themselves from competitors (Oyekunle

& Boohene, 2024; Chan, 2020). With the rapid pace at which these technologies are being developed and adopted, this means that organizations cannot afford to delay or neglect their efforts toward digital transformation and must be prepared to adapt their strategy, structure, and processes on an ongoing basis as a result of adopting these new technologies if they wish to remain competitive in today's rapidly evolving digital environment (Matt et al., 2015).

The digital transformation is also affecting the small business sector (Verhoef et al., 2021; Vial, 2019; OECD, 2021) . Many of these small businesses use digital tools in such as a website, mobile apps and social media for better communications with customers, marketing and to improve customer service (Rogers, 2003; Tornatzky & Fleischer, 1990). The increased availability of digital technologies has enabled many small businesses to participate more fully in the digital marketplace and to compete outside of their own local markets (World Bank, 2016). Small business owners also have direct contact with customers and are able to keep their businesses visible in competitive market via digital platforms (Cenamor et al., 2019). Consequently, experiences of digital transformation vary significantly across small business owners.

The past years have seen the digital transformation rise exponentially due to the global changes in the economy, the greater access to new technologies and the necessity to react to external events. The COVID-19 pandemic has clearly indicated that organizations who were well advanced in digital development could carry out many aspects of their operations remotely through digital collaboration, remote work and digital customer service (Paul et al., 2024). It demonstrated how digital transformation is crucial to organizational resilience and continuity.

Digital transformation can involve online platforms, digital payment systems, social media marketing, delivery apps, and direct digital interactions with customers in the case of small businesses like salons, gift shops, restaurants, and cake shops (Kothapalli, 2022; Joel et al., 2024). Digital change has enabled some small businesses to be more efficient

and scalable, while others are leveraging it to change the way they relate with customers and how they conduct their day to day business (Omowole et al., 2024). These support for instance social media communication, digital payments, online ordering, services through platforms, and customer engagement (OECD, 2021). However, the level and success of use can be influenced by the digital skills of the owner, resources available, time constraints and understanding of technology (Nambisan et al., 2017). Overall, the trends outlined here indicate that digital transformation is an integral part of most of the contemporary business strategies.

Despite the obvious benefits of digital transformation, small businesses are not able to embrace it successfully. The results from studies have demonstrated that one major source of difficulty for many small business owners is the lack of sufficient technology-based information as well as other sources of difficulties including a very limited budget and/or very limited technical expertise (Riemenschneider et al., 2003; Scuotto et al., 2017). For example, many small businesses do not have large numbers of employees or a high volume of capital to invest in new technologies (OECD, 2021). In addition, rapidly changing technologies require continuous learning and adaptation, which may create pressure for business owners who are already managing multiple operational responsibilities (Warner & Wäger, 2019).

Additional challenges associated with employees further complicate transformation processes. Employees might be afraid to lose their jobs, be unsure of the changes to anticipate or find it harder to use new digital tools. Employees are likely to oppose the introduction of digital technology and hinder the transformation process unless the business trains them, communicates, and oversees the transition process (Nadkarni & Prügl, 2021; Tsai & Su, 2022). Finally, some small businesses experience a shortage of digital skills, which creates a gap in the organization’s ability to implement digital technologies effectively (Omowole et al., 2024).

Research Questions

Main research question: How do small business owners experience and manage digital transformation through technologies in their daily business operations?

To address this objective, the study is further guided by the following sub-questions:

Sub-question 1: How do small business owners perceive the effects of digital tools on customer interaction, operational efficiency, and competitiveness?

Sub-question 2: What organizational and practical challenges do small business owners face when adopting digital tools?

The study will be conducted on small business owners in service and retail oriented businesses including salons, gift shops, restaurants, cake shops and other retail businesses and examine how small business owners are experiencing and coping with digital transformation. The study will emphasize organizational elements such as leadership, corporate culture, employee preparation, and alignment of the company's strategy with digitalization, and recognizes digital transformation as a socio-technical process (Nadkarni & Prügl, 2021). The research analyzes some of the most important digital technologies used today, such as artificial intelligence, cloud computing, data analytics, automation, and IoT, and looks into how they affect the performance of small businesses, customer experience, and innovation (Chan, 2020). From a theoretical perspective, the study makes a contribution to literature by analyzing the TOE framework that explains the influence of technological, organizational, and environmental elements on digital transformation in SMEs.

The thesis consists of five main chapters. Chapter 1 introduces the study by presenting the background of digital transformation, the problem statement, research gap, research questions, and the significance of the study. Chapter 2 presents the literature review, which discusses the concept and definitions of digital transformation, digital technologies and drivers enabling transformation, and the impact of digital transformation on business performance, including operational efficiency, customer experience, and innovation. In addition, the chapter examines organizational change,

human factors, barriers to digital transformation, and establishes the theoretical framework of the study based on previous research.

Chapter 3 explains the research methodology adopted in the study. In this chapter, the research design, research approach, data collection method, sample size, data analysis techniques and ethical considerations are discussed. It can also justify the choice of the research method in order to effectively answer the research questions. The results of the data collected and their analysis are presented and discussed in Chapter 4. The findings are structured along participant profiles, digital tools deployed, practices of digital transformation, their perceived impact on business performance, innovation, preparedness of the owner and the challenges in digital transformation. The chapter also contains a summary of the key findings of the study. Lastly, the results are compared to the existing literature and theory in Chapter 5. This chapter analyses the results and draws conclusions and recommendations for future research on the topic of digital transformation and business performance.

2 Literature Review

2.1 Digital Transformation and technologies : Concept and Definitions

The literature has established that digital transformation is not simply a one-time adoption of a new technology, but rather a continuous process at the level of the organization and cannot be reduced to technology only (Vial, 2019; Warner & Wäger, 2019. One of the most commonly mentioned definitions of digital transformation was provided by Vial (2019) who defines it as a process by which organizations react to the disruptions brought about by digital technologies and change their value creation paths, structures, and outcomes (Vial, 2019). This definition emphasizes that digital transformation is not only the adoption of new technologies, but also a considerable organizational change. Whereas Reis et al. (2018) explain digital transformation by making use of digital technologies for changing processes and generating value, Hinings et al. (2018) also refer to the transformation of the structure of the firm, of the institutional relations, and of the industry frontiers (Reis et al., 2018; Hinings et al., 2018).

The literature also differentiates digital transformation from related concepts such as digital technologies and digitalization. Digital technologies are defined as technological tools and systems such as cloud computing, artificial intelligence, mobile applications, social media, big data analytics, and Internet-based systems that allow for communication, automation, information processing and connectivity (Bharadwaj et al., 2013). Digitalization is defined as the use of these digital technologies for existing business processes to enhance efficiency, communication and productivity (Kraus et al., 2021). In contrast, digital transformation goes beyond operational improvement because it fundamentally changes organizational value creation, customer interaction, internal structures, and business strategies through the application of digital technologies (Vial, 2019). Warner and Wäger (2019) further argue that digital transformation involves the development of dynamic capabilities that help organizations continuously adapt to technological changes and environmental uncertainty (Warner & Wäger, 2019).

The systematic review proposed by Vial (2019) provides an extremely helpful framework consisting of various building blocks of digital transformation, such as digital technologies, value creation, structural changes, organizational barriers, and outcomes of transformation (Vial, 2019). Vial suggests that these dimensions are mutually dependent and work within a dynamic environment, and therefore, digital transformation is non-linear. That is, there is no linear progress of digital transformation (Vial, 2019). In this regard, organizations have to keep changing their strategies, processes and capabilities as a result of changing technologies. Nadkarni and Prügl (2021) provide a second significant theoretical approach to conceptualizing digital transformation, highlighting how it is a technology and a set of actors and that it influences business models, products, and organizational structures (Nadkarni & Prügl, 2021).

Another useful lens by which to interpret the digital transformation is the Technology Organization Environment (TOE) framework. This model recognizes three types of drivers that help an organization successfully achieve digital transformation: technological factors, organizational factors, and external environmental pressures. The TOE framework is relevant to this study because it helps explain how small businesses adopt digital tools in response to available technologies, owner and employee readiness, customer expectations, and competitive pressures. Kothapalli (2022) also presents TOE as useful theoretical lens for explaining digital transformation.

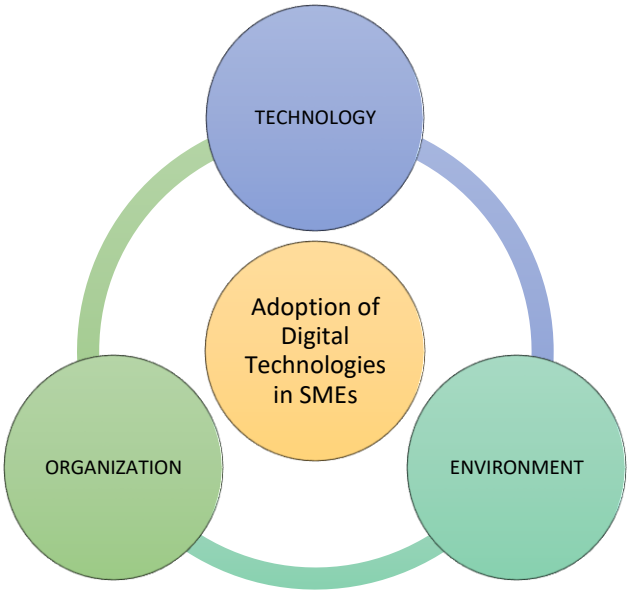

Figure 1: Technology–Organization–Environment (TOE) Framework (adapted from Tornatzky & Fleischer, 1990)

The Technology–Organization–Environment (TOE) framework developed by Tornatzky and Fleischer (1990) has been widely used to understand the processes that organizations go through when implementing and adopting new technology and has proved very appropriate to study the digital transformation among small businesses (Tornatzky & Fleischer, 1990). The framework indicates that the decision for adoption is influenced by three contextual factors: technological (availability, perceived usefulness, and compatibility of digital tools); organizational (firm size, managerial capability, internal resources, employees' digital skills); and environmental (competitive pressure, customer expectations, external support from vendors, government policies, and market infrastructure) (Baker, 2012). In particular, TOE is useful for small businesses as it reflects both internal factors, like financial and human resources, as well as external factors that affect the use of digital technologies in their everyday activities and interactions with customers (Oliveira & Martins, 2011). Previous studies have shown that the TOE framework is a valid tool to account for the differences in digital transformation among companies, as it shows the effect of organizational readiness and environmental dynamics on the outcomes of digital transformation, along with the role of technological capabilities (Zhu et al., 2006). Given that small businesses must address digital

transformation in order to manage the challenges of implementing digital tools in their daily activities, the TOE framework is applied to this study to analyze how it is experienced by small business owners in terms of operational efficiency, customer interaction, competitiveness, and the practical challenges they face in implementing digital tools into their business activities (Tornatzky & Fleischer, 1990; Zhu et al., 2006; Baker, 2012; Oliveira & Martins, 2011).

Table 1: Mapping of TOE Framework Dimensions to the Present Study Context

TOE Dimension	**Key Factors**	**Application in This Study**
Technology	Digital tools, Internet access, AI tools, ease of use, compatibility with business processes, cost of tools	How these tools (e.g., social media, online payment, e-commerce platforms) support daily business activities, marketing, and customer engagement
Organization	Owner digital skills, employee competence, financial resources, managerial support, time, financial capacity, willingness to adopt, business experience	How internal capabilities influence adoption and use of digital tools
Environment	Customer expectation, competition, delivery platforms, social media trends, platform algorithms	How external pressure and digital ecosystem shape transformation

2.2 Digital Technologies and Drivers of Digital Transformation in Small Businesses

Digitalization for small businesses has become a reality through the utilization of new digital technology products that enable small businesses to perform their day-to-day operations with increased effectiveness in terms of customer relationships and competition (Verhoef et al., 2021; Kotarba, 2018). Digital technologies have revolutionized how businesses operate and compete, while many small companies are incorporating cost-effective and functional digital solutions into their everyday work and improving their productivity and overall performance (Sebastian et al., 2017; Chan, 2020). Many small businesses are adopting cloud-based technologies because they provide flexible and scalable infrastructures that support remote operations, reduce hardware and software procurement costs, and enhance organizational agility in responding to changes in the marketplace (Chan, 2020; Kotarba, 2018). Small enterprises owners can handle information, communicate more efficiently and adjust speedily to changing market conditions without huge technological investment (Mell & Grance, 2011; Chan, 2020).

Furthermore, digital communication tools, e-commerce, social media apps and digital payment systems have become relevant tools for small businesses to communicate with customers and keep businesses running in digitalized environments (Taiminen & Karjaluoto, 2015; Ainin et al., 2015). Studies indicate that the small business often relies on platforms like online marketplaces, Facebook, Instagram, and WhatsApp to enhance their customer relationship, effective marketing efforts, and market expansion beyond the local market (Ainin et al., 2015; Verhoef et al., 2021). According to Nambisan (2017), digital technologies facilitate the emergence of new opportunities for innovation and market growth, but Scuotto et al. (2021) suggest that it is the SMEs that are more likely to have problems in benefiting from these opportunities. It is argued that it is as a result of lack of digital skills and readiness.

The application of Big Data Analytics in small businesses is also important in facilitating the transformation of operational processes and small businesses' decisions making (Chan, 2020; Wamba et al., 2017). In today's world, businesses collect vast amounts of data about customer behaviour, transaction information, sensor information, and internet usage and interactions, as well as other daily business operations (George et al., 2014; Chan, 2020). According to Chan (2020) Organizations using big data analytics effectively can use it to go beyond descriptive reporting and make predictive and prescriptive decisions regarding the operation of an organization. As a result, organizations can create better forecasting results and develop operational efficiencies (Chan, 2020). The application of big data analytics can be made more useful in conjunction with artificial intelligence (AI) and machine learning (ML), which enable organizations to automatically process data and support the complexity of making decisions (Dwivedi et al., 2021; Oyekunle & Boohene, 2024). With applications like chatbots, recommendation systems, automated customer services, fraud detection systems and predictive maintenance systems now being implemented by companies to increase customer satisfaction and productivity (Oyekunle & Boohene, 2024; Dwivedi et al., 2021).

Additionally, the internet of things (IoT) enables devices to be connected digitally via the network to collect and monitor information in real time. This allows companies to see what they are doing, decrease down times, and assist in performing predictive maintenance throughout various industries (Porter & Heppelmann, 2014; Moghrabi et al., 2023 These technologies can support small businesses in increasing their ability to perform efficiently, meet customer demands more quickly and maintain a position of competitive advantage within rapidly evolving markets (Bharadwaj et al., 2013; Sebastian et al., 2017). However, the literature indicates that although there are potential benefits from digital technologies and they can be powerful tools for organizations, the total benefit of digital technologies will depend upon the degree to

which they are strategically aligned and successfully integrated into current organizational designs and business practices (Nadkarni & Prügl, 2021; Vial, 2019).

The force behind the implementation of digital transformation is the interplay between technological, organizational and environmental influences on how small businesses functionally conduct themselves and competitively interact with each other (Verhoef et al., 2021; Vial, 2019). Technology is one of the major enablers of digital transformation due to its rapid development and accessibility, as cloud computing, AI, data analytics, and IoT have reduced barriers for businesses seeking to improve efficiency and innovation (Chan, 2020; Moghrabi et al., 2023). One major driver of digital transformation is changing customer expectations, Consumers want all aspects of transactions with companies to occur rapidly, individually tailored to them based on previous interactions with company personnel or past purchases from the company through digital interfaces (Lemon & Verhoef, 2016; Paul et al., 2024). Therefore, the growing demand for consumers to have seamless transactional processes through digital mediums is one of the major driving forces of digital transformation (Paul et al., 2024). Companies also engage in digital transformation activities to remain competitive and the level of competition among companies encourages many businesses to utilize digital technologies to improve performance and efficiency while reducing costs to remain competitive in extremely volatile markets (Joel et al., 2024; Vial, 2019).

External environmental factors such as globalization, market uncertainty, and global disruptions including the COVID-19 pandemic have also encouraged businesses to adopt remote working systems, digital collaboration platforms, and online service delivery systems (Fletcher & Griffiths, 2020; Paul et al., 2024). In addition to the above mentioned factors related to internal and external factors affecting organizations' adoption of digital technologies for improving business performance and competitiveness. Increasingly organizations are adopting digital solutions as a means to promote environmentally friendly resource usage and support sustainable business operations (Bieser & Hilty,

2018; Moghrabi et al., 2023). Internal organizational ambitions for growth and innovation also drive digital transformation, as many businesses have come to realize that digitalization represents opportunities for generating new sources of revenue, creating innovative business models and supporting long term strategic revitalizations as opposed to just utilizing digitalization as a mechanism for enhancing operational efficiencies (Kotarba, 2018).

However, while the opportunities that digital transformation offers is considerable, business owners may face various organizational and practical challenges concerning the execution of the transformation process (Nadkarni & Prügl, 2021; Bharadwaj et al., 2013). Some of the biggest hurdles in digital transformation process are: lack of financial sources, insufficient technical skills, insufficient digital skills, security threats, and organizational resistance to changes (Nadkarni & Prügl, 2021; Vial, 2019). Moreover, quite often it is rather difficult for owners of small businesses to adopt new digital tools to their organizations, besides carrying out normal operations (Westerman et al., 2014; Kane et al., 2015). Thus, one should take into consideration both the proper tools available for the digital transformation, as well as strategic fit with customers' desires and business strategy for growth (Westerman et al., 2014; Kane et al., 2015).

2.3 Impact on Small Business Performance

Digital transformation is attributed to facilitating better organization performance, as it allows companies to improve business performance, customer relationships, innovation, and market competitiveness in shifting business environments (Vial, 2019; Verhoef et al., 2021). Nevertheless, research has indicated that the positive consequences of digital transformation do not necessarily arise automatically, and they are conditioned upon the preparedness of the organization, leadership commitment, employee's competencies, strategic fit and the capability to adopt and integrate digital technologies into the operations of the organization (Westerman et al., 2014; Nadkarni & Prügl, 2021). It appears that, for many small business owners digital transformation is not a grand

strategy of the organization but a continuous effort of adaptation of daily business operations, communication patterns, customer interactions and service delivery through digital tools and platforms (Cenamor et al., 2019; Paul et al., 2024).

The impact of digital transformation, as revealed by literature, could be multiple on several aspects of firm performance including the business process, customer experience, market position, innovativeness, as well as long-term business performance (Vial, 2019; Zhang, 2025). Majority of the literature research on digital transformation agree that digital transformation can achieve better performance; however the extent of these achievements is influenced greatly by the effectiveness of the design and execution of the initiatives, and the integration in to the business operation (Vial, 2019). Small enterprises utilize the social media tools, payment and booking systems online, online booking applications, cloud services, artificial intelligence tools, e-commerce platforms to enhance their communication, reduce their operation work and improve relationship with customer (Ainin et al., 2015; Taiminen & Karjaluoto, 2015). The utilization of technology in many small enterprises can help facilitate many of the day-to-day operations like managing customer communication, making appointments and orders, taking payment, and processing inventory; it can also assist the online marketing of products and services. These tools are now used to conduct part of the work in small businesses, it plays an important role in modifying and simplifying everyday operation of small business (OECD, 2021; Cenamor et al., 2019).

Improvements in financial performance are another element that can be directly correlated with the adoption of digital transformation. Research, using the profitability measures, market performance measures, operational efficiency measures, and organizational growth measures, indicated that firms using digital transformation strategies can actually lead to better performance in the long run in comparison to firms not operating in the digital space (Zhang, 2025). Despite the results showing that firms can experience short term financial constraints caused by investments in technology infrastructure, system software implementation, training of employees, integration of

systems etc., in the long run they will contribute to sustained organization development (Zhang, 2025). This aspect is of utmost importance for small business firms where owner managers may have to trade off long term benefits of using digital transformation with short-term financial constraints incurred from adopting and implementing digital systems (Omowole et al., 2024).

Meanwhile, while digital technologies provide chances of growth, innovation, and efficiencies, it poses implementation challenges and organizational issues including cost of adoption, technological sophistication, employee training, security issues, dependence on technology providers and integration complexity (Omowole et al. 2024, Tsai & Su 2022). Small business owners are often under pressure to maintain online visibility, response quickly to customer demands, master new technologies, and adapt to constantly changing digital environments (Paul et al. 2024). This is critical for the current study because this research focuses on the perceptions of small business owners concerning the impacts of digital tools on operational efficiency, customers, competitive advantages and organizational/practical challenges in business operations.

Digital transformation can further promote organizational innovation and business model innovation through supports for experimentation, cooperation, operational flexibility and creation of new value (Verhoef et al. 2021). Firms are utilizing digital technologies to develop new products and services, modify organizational processes, improve customer interactions and change their business models to meet ever-changing environments. Innovations of processes can be achieved through automation systems, data analytics and digital communication platforms to improve working flows and efficiency (Agustian et al. 2023). Innovations of products and services are likely generated by analysis of customer data, digital interaction and direct response to customers (Dwivedi et al. 2021). The most significant implication of digital transformation business model innovation occurs when businesses are adopting subscription based, online markets, online and offline hybrid services or platform based business models (Kotarba 2018). In SMEs, business model innovations usually manifest

through gradual modification on modes of communication, sales activities, service provision processes and customer interaction mechanisms, rather than large-scale organizational reorganizations (Cenamor et al. 2019).

Similarly, literature suggests that the outcome of digital transformation is not always beneficial. Many researchers have provided cases where the benefits from digital transformation are not as planned due to problems like poor alignment of digital transformation to organization strategy, poorly designed implementation processes, lack of organizational readiness, insufficient support from top management or weak connection between technological elements and organizational processes (Vial, 2019; Westerman et al., 2014). In addition, researchers showed that the impact on efficiency greatly depends on how digital technologies integrate into everyday work activities and routines of the organizations (Westerman et al., 2014). In other words, separate digital technologies could also create more coordination problems and technological complexity if not well aligned to business requirements and employee skills.

The performance effects also varies depending on organizations' characteristics like leadership strength, structure, digital capability, resource availability and environment (Vial, 2019; Nadkarni & Prügl, 2021). The more strongly leadership support and digital capabilities, learning orientation, and strategy align, the better organizations perform on digital transformation in long term (Westerman et al., 2014). On the other hand, businesses facing financial pressure, technological uncertainty or organizational under-readiness may have different impact of digital transformation (Omowole et al., 2024). Thus, small business owners' experiences become key element in understand impact of digital transformation in practices to efficiency, customer interaction, competitiveness and business performance.

In sum, the existing literature offers strong evidence to support the argument that digital transformation can impact various aspects of business performance: efficiency, financial

performance, customer service, innovation ability and competitiveness (Vial, 2019; Zhang, 2025). However, benefits of digital transformation are influenced by many aspects such as the level of organizational readiness, management of change, strategic alignment and the degree of alignment between technology and business and operations (Westerman et al., 2014; Nadkarni & Prügl, 2021). In the context of small businesses, digital transformation must be understood as a continual socio-technical process characterized by adoption of technologies, reorganization, owner learning, employee readiness, and evolving adjustments to customer and competitive environments (Vial, 2019; Warner & Wäger, 2019).

2.3.1 Operational Efficiency

Consistent findings indicate that there is a positive association between digital transformation and organizational performance, due to reduced costs of operations, increased productivity and responsiveness, and better information processing, all facilitated by digital technologies (Zhang, 2025; Kothapalli, 2022). The digitalization of operational processes and business operations via information systems helps to eliminate duplication, reduce human error, accelerate communications and improve coordinated operations (Chan, 2020; Bharadwaj et al., 2013), thus enhancing efficiency of operations and better use of resources (Chan, 2020; Bharadwaj et al., 2013). Technologies such as automation and digital management reduce the time needed for administration, and expedite the exchange of information among workers, suppliers, and customers (Chan, 2020).

Improved efficiency is achieved through real-time data analysis and reporting systems that provide opportunities to monitor operational processes, and make adjustment to optimize resource allocation, ultimately lowering the costs while increasing the efficiency (Chan, 2020). Yet, the impact of the improved efficiency, as mentioned above, is found to depend on integration across the organization, as scattered efforts of digitalization cannot bring in performance improvement over the whole system but full integration of the whole value chain can bring greater performance outcome (Vial, 2019).

Moreover, the cloud technologies further empower the digitalization by providing flexible and scalable computing resources with little upfront capital investment (Armbrust et al., 2010; Mell & Grance, 2011). Organizations need no longer to invest large sums of money on physical IT infrastructure, and can expand computing power based on the demand, resulting in effective responsiveness to external environment and markets (Chan, 2020; Kotarba, 2018). Especially for small businesses, the cloud technologies improve accessibility, responsiveness, as well as efficiency by reducing the need for owning and maintaining IT infrastructure (Chan, 2020).

2.3.2 Customer Experience

Customer experience has also emerged as one of the most affected dimensions during digital transformation because digital technologies enable businesses to deliver rapid, personal, and convenient customer interactions (Lemon & Verhoef, 2016; Verhoef et al., 2021). With the implementation of digital communication channels, websites, mobile applications, and social media systems, firms are able to provide prompt response to customers, ongoing communication with them, and readily available service channels through various digital media (Taiminen & Karjaluoto, 2015). Artificial intelligence and data analytics further enhance customer experience by providing personalized marketing, automatic customer support, recommendations systems and customer relationship management systems to assist customer satisfaction and service quality (Oyekunle & Boohene, 2024; Payne & Frow, 2005). While Chaffey and Ellis-Chadwick (2019) highlight the role of digital platforms in strengthening customer engagement and communication, Kumar et al. (2021) argue that maintaining personalized customer relationships in highly digital environments remains a challenge for many SMEs" (Chaffey & Ellis-Chadwick, 2019; Kumar et al., 2021).

Organizations can now automate customer services such as Chatbots and virtual agents to have customers respond instantly to customers, reduced service response time and enhanced service availability (Oyekunle & Boohene, 2024). Automation in customer

service within organizations generates a higher satisfaction in customers and saves costs. Digital transformation also enables a loop feedback system where companies can receive real-time customers' feedback and data which can assist companies in discovering service gaps and changing their products rapidly so that customer experience becomes dynamic instead of static (Kothapalli, 2022).

Further, digital channel customer interaction is stated as one of the vital dimensions, because it's observed that customers interact across physical and digital contexts within organizations (Paul et al., 2024). As such, digital transformation enables the organization to integrate their service and experience across their website, social media pages, on-line order systems, mobile application and physical stores. In small firms customer interaction becomes the early, visible transformation component as the affordable means provided by the digital tools enhance their communication, customer engagement and market exposure (Ainin et al., 2015; Cenamor et al., 2019).

2.3.3 Innovation and Business Models

It is largely agreed that digital transformation plays a crucial role in fostering organizational innovation, which enables innovation in processes, products and services, business model change, and ecosystem collaboration, particularly in more and more competition-intensive environment ((Vaska et al., 2021). Automation systems, analytics technologies, digital platforms, and real-time monitoring systems help organizations to enhance their internal processes, increase operational efficiency, speed up the development cycles and reduce the experimentation costs, thus lowering the experimental costs and innovational costs (Agustian et al., 2023).

Digital transformation helps organizations in developing digital and hybrid products and services, better response to dynamic customer demands and market trends, which could bring great flexibility and reactivity to organizations (Agustian et al., 2023). Business model innovation is a vital contribution from digital transformation; it enables organizations to develop subscription based, platform based and outcome based

business models that open up new revenue streams and create long term competitive advantage (Kotarba, 2018). These digital based business models enable organizations expand its reach fast, enhance its market access and improve organizational sustainability compared to organizations using the old operational paradigm. Also, digital transformation also fuels ecosystem innovation; organizations could cooperate closely with suppliers, customers and partners via the use of digital platforms and networked technology system, which makes knowledge sharing and collaboration among business partners come true and facilitates the rapid spread of innovative products and ideas in the entire business network (Nambisan et al., 2017).

2.4 Organizational Change and Human Factors

Although organizations typically start the digital transformation process through the implementation of digital technologies (cloud systems, automation platforms, AI applications and digital communication devices, etc.), the sustainability and success of the whole effort depends upon whether companies are capable of transforming organizational processes and human behaviors along with the technological change (Westerman et al., 2014). Accordingly, digital transformation demands organizations to change routine, work, and management systems so that new digital tools can effectively be integrated into daily business operations (Nadkarni & Prügl, 2021). Fragmentation in implementation, weak employees' commitment and limited long-term value creation could result if organizational adaptations are not sufficiently made along with the implementation of digital systems since technology change alone is not sufficient to lead organizational change (Vial, 2019).

With regard to the business processes, the redesign of operational routines can be deemed a core component in organizational change since new digital technologies may influence how operations work is coordinated, managed and undertaken in organizations (Zgalat-Lozynska et al., 2023). Automation technologies, integrated digital platform, analytics systems and cloud computing applications usually change how work processes in organizations are transformed from rigidly linear ones into more flexible,

interconnected and agile ones (Chan, 2020). Re-designing workflows may lead to better coordination in business operations, reduce unnecessary non-value adding activities and information flow as well as speed up communication so as to respond better to customers' requirements and market dynamic (Zgalat-Lozynska et al., 2023). Regarding small businesses, the modification of working routines is particularly significant since owner-managers may undertake multiple operational roles simultaneously, such as customers communication, administration, operation service, marketing and managing finance (Cenamor et al., 2019). Consequently, in small businesses, digital transformation means not only to adopt new digital systems, but to reorganize routines so as to fulfill the new demands by implementing them.

In terms of employees, the success or failure of digital transformation is considered to be dependent on employees' attitudes, capabilities and willingness to change (Tsai & Su, 2022). Employee resistance was often considered to be one of the biggest organizational obstacles in digital transformation since they may have uncertainty to the new technologies, concerns about job lost and insecurity in using new digital tools (Tsai & Su, 2022). It may even be true that employees would think new digital technologies could even add more burdens to their work since their knowledge, confidence and attitudes to technology might not in line with the demands brought by digital change especially if training, communication and support were not provided to employees during the change process (Westerman et al., 2014). In consequence, negative attitude toward new technology may reduce employees' commitment to organizational adaptation efforts. Regarding small businesses, the effect of resistance to the use of new digital technologies on operational work coordination and service delivery is substantial since employees are often supposed to do multiple jobs simultaneously (OECD, 2021).

Thus, training and learning organizations could become central aspects of successful digital transformation since both employees and management have to learn new skills to use the new digital tools (Nadkarni & Prügl, 2021). Empirical study has shown that investing in employees' learning, communication and building employees' digital

capability can increase organization's adoption and sustainable benefit of digital technologies (Tsai & Su, 2022). The process is usually an organizational learning process in small business where owner-managers have a critical role in assisting their employees to adopt new digital tools gradually through their involvement in various business activities and informal learning mechanisms (Cenamor et al., 2019).

The role of organizational culture also seems to be a significant factor influencing digital transformation, because values, communication patterns, and practices of leadership shape how an organization embraces or resists technological change (Nadkarni & Prügl, 2021). Organizations that promote cultures of collaboration, flexibility and learning, generally perform better at supporting innovation, experimenting, and adaptation to the rapidly evolving digital world (Tsai & Su, 2022). On the contrary, rigidly hierarchical cultures hinder communication and collaboration, decrease involvement of employees, and slower down the organizational adaptation process to new technologies. Thus leadership and change management is identified as critical to developing a culture supporting innovation through digital technologies (Westerman et al., 2014).

In the case of SMEs, organizational culture tends to be highly dominated by the owner-manager, because structures are less formalized compared to larger firms (Cenamor et al., 2019). As a result, the owner-manager's own technological perspective, confidence and management decisions greatly determine how employees react towards digital transformation projects and whether digital technologies become successfully embedded in their routines. It is also pointed out in the literature that digital transformation should be treated as a socio-technical process because it concerns interaction between technological systems, organizational structures, human behavior, and operational practices (Vial, 2019). This implies that organizations should align not only technologies but also people, operational processes and strategic objectives during digital transformation projects (Westerman et al., 2014). This finding is of utmost relevance to this study, since it focuses on owner-manager's perception of and

management of the digital transformation process within daily routines while addressing questions related to efficiency, customers, competition and organizational challenges.

From the standpoint of this study, change process and human factor are particularly critical since the introduction of digital tools affects managerial routines, employees' tasks and roles, communication patterns, customer interactions, and operational coordination processes (Nadkarni & Prügl, 2021; Vial, 2019). The perception of small business owners provides insight into the learning process that organization undergo, the extent of the influence of human factors on their success or failure in digital transformation process and on their limited resources (Cenamor et al., 2019; Westerman et al., 2014). In particular, the discussion above further substantiates the research questions being addressed since it reveals how owner-managers perceive the effects of digital technologies on operational efficiency and customer relations while dealing with issues of change and adaptation at the organizational and practical level (Tsai & Su, 2022; OECD, 2021).

2.5 Barriers to Digital Transformation

Although the use of digital transformation in modern organizations has become more and more popular, many organizations still face many challenges and difficulties regarding the adoption, implementation and the effective usage of digital technologies (Bouwman et al., 2019; Warner & Wäger, 2019. As a result, digital transformation for small businesses are often perceived as an adaptive, struggling process rather than an immediate and concrete technical innovation project (Pelletier & Cloutier, 2019; Warner & Wäger, 2019). This problem is relevant to the current research as the objective of the present research is to understand the organizational and practical difficulties faced by owners-managers of small businesses in the process of adopting digital tools into daily business practices (Cenamor et al., 2019; OECD, 2021).

The absence of the required digital knowledge and technical competencies within the organization seems to be one of the most common challenges in the literature. As it

often happens, organizations fail to use digital technologies as they may not have skilled employees or managers to operate, integrate and manage digital systems (Ramdani et al., 2013). Technological progress in digital fields also complicates the situation as knowledge and technology is constantly updated, and organizations have to learn new systems and update their knowledge (Warner & Wäger, 2019). This problem seems even bigger for small businesses, where employees/owner-managers usually perform multiple responsibilities at the same time and may lack the possibility to acquire new technical competencies or receive technical support (Pelletier & Cloutier, 2019). This consequently weakens the willingness and potentiality of the organization to adopt new digital tools, lowers confidence and effectiveness.

Financial difficulties can be another critical barrier as the adoption and implementation of digital technologies often require substantial financial investment on systems, network infrastructure, cybersecurity, skills development and ongoing maintenance services (Bouwman et al., 2019). Although in the long term digital transformation can bring many operational and competitive advantages, small businesses may not be able to manage the short-term cost burden of digital adoption (Ramdani et al., 2013). The costs associated with software, cloud platforms, digital marketing, AI, and system integration may be discouraging to small businesses and owner-managers need to balance operational necessities with investment choices (OECD, 2021).

In addition to these factors, technical infrastructure and system compatibility also present challenges for digital transformation as many organizations operate with outdated IT infrastructure that may be incompatible with the latest digital solutions (Bharadwaj et al., 2013). Older systems are not compatible with new software such as cloud services, automation tools, analysis applications or integrated communication systems. This can lead to the inability to adopt new technologies, resulting in extra costs, complexity and uncertainty regarding implementation (Verhoef et al., 2021). The business operations may be severely disrupted during the integration of old and new

systems, especially when the owner-managers have limited capacity to deal with those challenges.

Another significant challenge encountered is the lack of clear strategic vision for digital transformation projects (Vial, 2019). Sometimes organizations try to undertake various digital initiatives at once resulting in lack of coordination, redundancy and operational fragmentation (Vial, 2019). Instead of adding value, the investment in digitalization can bring more complexity than improvement. This barrier is certainly relevant for small businesses, as owners-managers often embrace digital tools in a reactive and incremental fashion (e.g., in order to meet customer expectations) rather than with a proactive strategic plan (Cenamor et al., 2019).

Resistance to change is also one of the key organizational barriers since employees and managers can have fears related to changed work processes and the use of new technologies (Nadkarni & Prügl, 2021). Digital systems may increase the work complexity or threatens the jobs if the organization does not provide enough communication, assistance and training for the implementation of the digital systems (Tsai & Su, 2022). In the case of small businesses resistance may affect coordination of workflow, service quality and customer interface because operational work groups are small and tightly knit together. So organizational change and employees' adaptation play an important role.

Further, it can also be seen that external environmental conditions may lead to success or failure of digital transformation processes. Increased competitive pressure, changing customer expectations, the rapid development of technologies and rapidly changing digital trends are forcing organizations to change the work processes and methods of communication (Paul et al., 2024).

All in all the literature clearly indicates that the barriers to digital transformation are multi-dimensional where challenges related to technology, finances, organizations, strategy and people co-exist together (Vial, 2019; Warner & Wäger, 2019). The existence

of restricted funds, lack of technical knowledge and owner-manager's involvement in day-to-day operations can exaggerate these barriers for small businesses (OECD, 2021). It is crucial to acknowledge these barriers in explaining the experiences and challenges of small business owners during digital transformation at their business. This paragraph provides direct evidence for the research questions of this study; it identifies the organizational and operational barriers that are likely to occur when new digital technologies are implemented, it describes the effects that such challenges have on work efficiency, customer interaction, competitiveness and the digital transformation experience of small business owners.

2.6 Theoretical Framework

This study uses Tornatzky and Fleischer's (1990) Technology-Organization-Environment (TOE) framework as the main theoretical basis to interpret digital transformation among small businesses. The TOE framework, as supported by Baker (2012), explains technological adoption and organizational innovation through the interplay of three contextual variables of technological, organizational and environmental nature. Compared to individual-level technology adoption models such as the Technology Acceptance Model (TAM), the TOE framework provides a broader perspective by incorporating organizational and environmental influences on technological adoption (Gangwar et al., 2015). The TOE framework is a well-regarded construct to interpret digital transformation and information systems as it can be viewed as a suitable framework to illustrate how organizations adopt and implement technological innovation through the combination of organizational and environmental context (Oliveira & Martins, 2011). It is relevant to use the TOE framework here as it enables analyzing digital transformation not just as a technological initiative, but as a business phenomenon which involves human behaviors, operations, customers and competitors as well as the management’s vision.

The technological dimension in the TOE framework concerns the characteristics and capabilities of a technology that can facilitate or hinder adoption and utilization

(Tornatzky & Fleischer, 1990). Factors such as the usefulness, complexity, compatibility and accessibility of technology, along with its technical advantage and functionality may affect adoption (Oliveira & Martins, 2011). Within this research, the technological aspect is constituted of the digital technologies commonly adopted in small businesses, such as social media platforms, cloud computing, digital payment technologies, e-commerce, booking system, artificial intelligence, communication applications. It has been shown in the literature that these technologies contribute to improve workflow coordination, customer communication, market reach and business responsiveness if successfully integrated to daily business practices (Chan, 2020; Verhoef et al., 2021).

The organizational dimension within the TOE framework captures organizational conditions that impact technology adoption and organizational transformation processes (Baker, 2012). The internal context consists of the degree of support from the management, organizational culture, knowledge level and competence of the employees, financial resources available, communication structure, management readiness and flexibility of the organization (Oliveira & Martins, 2011). It has been shown in various literature that organization readiness, employees' capability to adapt, ability to learn and managers' commitment are critical as technology alone cannot bring about sustainable organization change unless there is adequate human and structure adaptation (Nadkarni & Prügl, 2021; Westerman et al., 2014). The organizations with supportive work cultures, willingness to learn and management's readiness are more likely to integrate digital technologies in daily operations, as well as to better react to the external changes in business environments (Tsai & Su, 2022); otherwise, reluctance to change, low employees' IT knowledge, weak communication and scarce capital may hamper digital transformation efforts of small firms (Pelletier & Cloutier, 2019).

The environmental dimension in the TOE framework consists of the external contextual influences on technological adoption and organizational transformation (Tornatzky & Fleischer, 1990). The environmental factors encompass competitor pressures, customer requirements, technological development, market uncertainty, regulatory environments

and relationships with business networks and suppliers (Baker, 2012). In today's digital markets, small businesses are often subject to market pressures to stay accessible and present in the internet, to cater to customers' ever-changing demand for speed and service quality, and to make use of digital channels to communicate with clients and competitors (Paul et al., 2024). Being in highly competitive small business markets means small firms are sensitive to their external environment and business continuity largely relies on their capabilities to interact with and adapt to such changing conditions as customer behavior and competition (Kraus et al., 2021). The emergence of COVID-19 pandemic had further forced small businesses to integrate more digital technologies in the daily operations as communication, online ordering, online payment, and cloud systems could be used to address and overcome difficulties of remote work, customer interaction, business continuity (Paul et al., 2024). Thus, external environment is one of the key drivers for small business owners to make decisions toward digital transformation.

This study is suitable to use TOE as it interprets digital transformation through the interaction between technological opportunities, internal organizational characteristics and external environmental conditions of the small business owner. It enables to determine the roles of technology in the processes of business operation, customer relation and competition, and also in identifying the organizational and practical challenges accompanying the adoption of new technology. Specifically, the technological context can be used to illustrate how digital technology (e.g. Social media platform, online payment, cloud system, digital communication tools) affects daily operation and relationship with customers, while the organizational context explains the adaptation by owners, employees' learning, shortage of funds and internal flexibility of the business. Finally, the environmental dimension illustrates the impact on business practices of customer expectations, competition, trends and market uncertainties.

The TOE framework is consistent with the study's research questions since it provides a useful structure for assessing the impacts and challenges of digital transformation for

small business owners. First sub-question relates how small business owners perceive the impact of digital technologies to customer relationship, operational efficiency and competitive advantage, which corresponds to the technological and environmental dimension of the framework. Second question probes the practical and organizational challenges that arise in digital transformation of small businesses, which strongly associates with the organizational dimension, covering issues of employee adoption, owner readiness, lack of resources and flexibility. Hence, the TOE framework serves as a theoretical guideline for the analysis of how small business owners perceive and deal with digital transformation in a business environment.

Furthermore, the study is supported by the view that organizations and technology are inextricably linked in the form of socio-technical systems and digital transformation involves the intertwined interplay of human behaviors, organization structures, technology and business processes (Vial, 2019). In this perspective, digital transformation is a dynamic process of ongoing organizational adaptation to people, technologies, and business processes and work practices (Warner & Wäger, 2019). Socio-technical perspective is relevant for this study as it can explain how small business owner experience digital transformation in everyday operations instead of via structured programs or separate digital departments.

In sum, this study treats digital transformation as a multiple-perspective process influenced by technology, organization and environment characteristics. It is argued that the TOE framework supplemented by socio-technical perspectives provides the right framework for an interpretation of small business owners' experience of digital transformation, and allows a closer analysis of the contribution of digital technology to the improvement of customers' interactions, business operational efficiency and competitiveness as well as the inherent challenges that small business owners face when performing digital transformation in a technologically progressive environment.

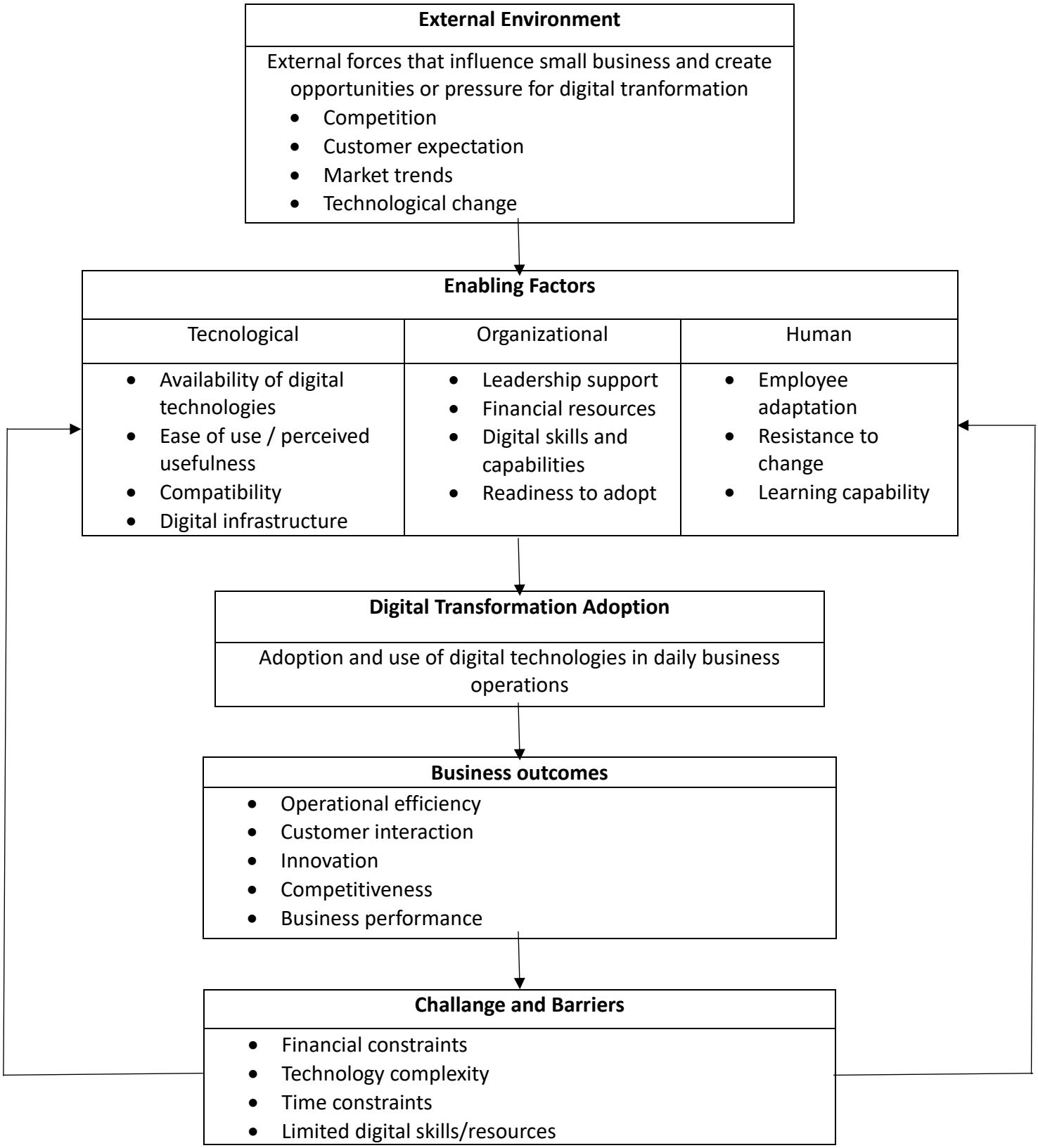

Figure 2: Conceptual Framework of Digital Transformation in Small Businesses (adapted from TOE Framework)

3 Research Methodology

In this chapter the research methodology of this research study to observe the digital transformation by digital technology in small business is outlined. The researcher is going to define research approach, research strategy (methods of data collection), sample selection and methods of data analysis and data quality. John W. Creswell and J. David Creswell (2018) defines methodology as "the steps the researchers are going to take in data collection, data analysis, and interpretation" (Creswell & Creswell, 2018). This research aims to understand how small business owner experiences and handles digital transformation through technologies in business operations, relationships with customer and competitors, and actual issues faced. As the study is about experiences, perceptions and reality of the subject the researcher has chosen qualitative methodology.

This study used interpretivism as its research philosophy. Interpretivism, concerned with understanding meanings individuals attach to phenomena (Crotty, 1998), aims to understand people's perceptions, experiences and understanding of social and organizational phenomena within the natural context (Crotty, 1998). Digital transformation in small businesses is a complicated process and includes the way business owners perceive and make decision regarding the process of implementation of digital technology, as well as business owner's interactions and experiences with the digital technology; therefore, this kind of phenomenon fits within interpretivist philosophy and gives an in depth understanding to the experience of small business owner through the process of digital transformation with regard to their daily business operation.

3.1 Research Approach

A qualitative research design was adopted as appropriate to understand experiences, views, behaviors and processes occurring at the individual, group or social level in a in-

depth way. Qualitative research aims at discovering how people make sense of their experiences and construct their understanding of their world (Merriam & Tisdell, 2016). For this research, qualitative approach will allow the researcher to understand how small business owners perceive the part that digital technologies play in their customers' relationship management, process optimization, business competition and business issues. The theoretical underpinning for the study consisted in using Technology-Organization-Environment (TOE) theory and theories of digital transformation of small businesses; this has contributed to formulation of themes for interview and interpretation of results.

The research design of this study consisted of a mono-method qualitative design whereby semi-structured interviews were the sole method for data collection. Semi-structured interview is a type of interviewing technique, wherein the interviewer has a set of prepared question(s) and a guide to interview but leaves room for respondents to respond in more expansive ways. This allows a deeper probe into their perspective. The use of semi-structured interview was found to be a fitting method to acquire a nuanced and in-depth view of real business situation and experiences faced by the small business owners. The research strategy is that of multiple-case study design. Case study research strategy is an empirical inquiry that investigates a phenomenon within its real-world context (Yin, 2018). By including multiple small business firms from different industry segments, the study was able to explore digital transformation experiences in a variety of business settings.

3.2 Case Selection & Sample

The sample selected for this study consists of small business owners with practical knowledge of the use of digital technologies in business. The purpose of selecting these participants is to obtain practical experience and application based knowledge regarding the day-to-day operations, customer interaction, competitiveness and problems encountered by small business due to digital transformation.

A total of five participants are involved in this study. The businesses included for this study belong to sectors namely salons, restaurants, cake shops and gift shops. Inclusion of different types of businesses has broader perspective about how small businesses are experiencing digital transformation.

The sample of the participants was determined using purposive sampling. Purposive sampling selects people with particular knowledge and experience relating to the subject. Matthew B. Miles, A. Michael Huberman and Johnny Saldaña (2020) defined that purposive sampling is typically used in qualitative research, where individuals are selected on the basis of their relevance to the research questions (Miles et al., 2020). The selected participants in this study are those with experience using social media marketing, online ordering, digital payment systems, communication applications, or customer engagement applications online.

3.3 Data Collection

The primary data collection method used in this study was semi-structured interviews. Semi-structured interviews provide flexibility for participants to explain their experiences while allowing the researcher to maintain focus on the research objectives and interview themes. According to Steinar Kvale and Svend Brinkmann (2015), semi-structured interviews are suitable for understanding participants' lived experiences and perspectives in qualitative research (Kvale & Brinkmann, 2015).

The interview questions were developed based on the research questions and theoretical framework of the study. The interviews focused on themes related to:

- adoption of digital technologies
- impact on business performance
- customer experience and innovation impact
- organizational change and owner/employee readiness
- challenges associated with implementing digital transformation

Table 2: Overview of Interviews

Participant	Business type	Years in operation	Role	Interview Duration
Participant 1	Barbershop	2+ years	Owner	21 minutes
Participant 2	Online retail business	6 years	Co-founder	13 minutes
Participant 3	Jewelry and accessories business	6 years	Owner	11 minutes
Participant 4	Cake business	10 years	Owner	15 minutes
Participant 5	Restaurant franchise	7 months	Shareholder/worker	19 minutes

The interviews were conducted through online communication platforms depending on the availability and preference of the participants. Each interview lasted approximately 15 to 25 minutes. Before conducting the interviews, participants were informed about the purpose of the research and their participation rights. Consent was obtained from all participants before beginning the interviews. During the interviews, detailed notes were taken to ensure accurate recording of participant responses and experiences.

The questions asked in the interview guide were of an open-ended nature, focusing on how the practical usage of digital technology in business has an impact on day-to-day business practices. It considered the kind of digital tools used, reasons for adopting digital technologies and impact of the use of digital technologies on customers, operations, competitiveness and innovation. The questions also considered organizational adaptation, reactions of employees towards digital changes, needs for skills and training and practical issues, such as economic, technical or operational constraints confronted by businesses. Moreover, whether business model changes, online service development or business plan development for future was a consequence of digital technologies was explored.

3.4 Data Analysis

All interview data was then subject to thematic qualitative analysis. Thematic analysis is a qualitatively based analytic procedure that aims to identify, organize and analyze patterns and themes in qualitative data. According to Virginia Braun and Victoria Clarke (2006), thematic analysis is a flexible and widely used approach to examine participant's experience, perception and meaning (Braun & Clarke, 2006). This method of analysis was considered suitable as the purpose of this study was to explore how small business owners experience and manage the small business digital transformation via digital technologies in day-to-day operations.

After conducting all the interviews, a step by step process of analysis began. Repeatedly reading the interview notes to become familiar with the interviewees responses. In the familiarization process the data was thoroughly read over to gain an understanding of participants experience of digital transformation. By repeatedly reading through the data key statements, recurrent ideas and meaningful patterns in small business digital transformation could be identified. This step is analogous with the first phase of thematic analysis, i.e. Repeated readings of the data for in-depth familiarity (Braun & Clarke, 2006).

Subsequently, all the interview data collected was manually coded through the process of keyword identification, concept identification and relevant participant comments in relation to the research questions. Johnny Saldaña (2021) notes that coding is a fundamental step in qualitative analysis where the qualitative data are reorganized into themes and conceptual categories (Saldaña, 2021). Similar codes were then grouped to form thematic categories.

The themes were developed based on the objectives of this study, research questions, and TOE framework. Some of the major themes were, digital transformation through digital technologies, performance outcomes from this business transformation, customer experience, operational efficiency, competitive advantage, innovation results,

readiness of organization, limitations and barriers related to the small business digital transformation.

Further, the themes were re- examined to ensure that they represent participants' experiences and perceptions appropriately. The results obtained from this study was then compared to the TOE framework and previous studies done on small business digital transformation. The objective of this thematic analysis was to find how small business owners perceive and manage small business digital transformation, and impact of digital technologies on customer interactions, competitiveness, daily business operation and practical problems encountered.

3.5 Assessment of the Quality of the Data

To ensure quality of research data and findings of research, qualitative research depends on trust worthiness and credibility of data (Lincoln & Guba, 1985). Credibility, dependability, confirmability and transferability of data are considered as criteria in qualitative data quality evaluation. These elements were addressed in the course of this research so that the data are dependable and trustworthy.

There were few ways to achieve quality data in this study. Firstly, the interview questions were specifically drafted considering research objectives, questions, and TOE framework to maintain consistency, yet allowing the participants enough scope to elaborate on their perception and experience of the digital transformation of their small businesses.

Secondly, this study includes small business owners from service related and retail related sectors. The use of owners from different business backgrounds provides diverse experience regarding the digital transformation, customers' engagement, and business operations efficiency, competitive advantage and practicalities of using digital technology for businesses.

Thirdly, all research methods used in this study including participant selection criteria, data collection method (interview) and thematic analysis procedure are systematically

and transparently described (Creswell & Creswell, 2018), and repeated readings of the interview notes for coding ensures that the themes identified reflect participant statements accurately.

The limitation in this study is that data is collected from a sample size that is comparatively small, which limits the generalizability to other small businesses but provides important insight on owners' perspectives on the small business digital transformation through the use of digital technologies in everyday business operations.

3.6 Ethical Considerations

Ethical considerations were carefully observed during the research process. Participation in the study was voluntary, and all participants were informed about the purpose and objectives of the research before the interviews were conducted. The data were collected for academic purposes and stored securely. Participants were informed that they had the right to withdraw from the study at any stage without any consequences. The research was conducted in line with standard academic ethical guidelines.

4 Findings

This chapter will document a sequence of five semi-structured interviews with small business owners in different types of business: barbershop, online retail business, jewelry and accessories business, bakery and restaurant franchise. Despite differences between businesses in operating structures, ages and levels of digital sophistication, the interviews produced several consistent themes: digital technology has now become part of daily practices of small businesses and most business owners have a positive attitude to it and consider digital technology as a practical tool in facilitating access to customers, increasing the operational efficiency, visibility of their business and its competitive advantage.

The themes in this section are divided into four parts: digital transformation as daily practice; perceived impacts of digital technology to customers, operation and competitiveness of business; readiness and constraints; and expectations for digital transformation in small businesses.

4.1 Digital Transformation through technology as Daily Business Practice

From the study, we can perceive that for digital transformation in small businesses is primarily experienced as an everyday operational activity rather than as a formal organizational strategy. In all interviews, the small business owners perceived digital technology to be practical tools which were instrumental to the day-to-day operations of their business, in communication with customers and, sales processes as well as the delivery of service. It was not that the most sophisticated technology system was incorporated in the initial stage but instead easily available and customer-oriented technology that could be of help to make day-to-day operation convenient, visible and reach customers more effectively in the very beginning. The most often utilized technology includes social media networks, digital payment services, ordering/booking system on the internet, website, cloud storage system, basic automation tool. Facebook and Instagram were cited as the most frequently used digital technologies. Small business owners emphasized that having and maintain accounts on digital media

platforms is essential not only for communication but also for keeping themselves visible and competitive among the business environments turning into more and more digital.

> *"We are using social media like TikTok, Instagram, Facebook, and those stuff. And then we are using online booking system or digital payment." (participant 1)*

> *"In our business, we mainly use the Facebook for product promotion, customer communications and order collection. We also use online payment system and digital design reference for customer orders." (participant 4)*

One participant explained that digital tools were mainly adopted "to reach the customers, save time and reduce manual work" (Participant 2), while Participant 5 (franchisee of a restaurant chain) highlighted digital payment options; promotions using Facebook; and third-party delivery services. From this observation, it can be presumed that digital adoption in small firms tend to start with customer-facing technologies that directly support accessibility, communication, visibility, and operational efficiency before businesses gradually adopt more advanced and complex digital systems.

Participants' motivations for implementing these digital solutions were very similar. Participants indicated that they implemented digital solutions to provide better access, convenience, visibility and efficiency to customers. Participants consistently described customer convenience, accessibility, and faster communication as major motivations for adopting digital technologies. Participant 2 stated that digital technologies helped:

> *"Basically, to reach the customers, save time and reduce manual work, run the business efficiently without needing a physical store." (participant 2)*

Likewise, Participant 4 explained that:

> *"Actually, the main motivation was customer convenience and market expansion. Digital tools allow us to conduct with more customers quickly."*

(participant 4)

Participant 1 indicated that implementation of digital solutions was directly related to making the business appear more professional and legitimate. Participant 2 noted that digital solutions enabled the business to operate efficiently without having to maintain a physical storefront. Participant 2 emphasized that digital technologies enabled the business to operate more efficiently without maintaining a physical storefront, while Participant 3 highlighted that digital platforms created opportunities to start and operate a business with relatively low investment while still reaching a broad customer audience. Participant 5 explained that digital solutions were a significant tool in acquiring traction among consumers and boosting sales in the restaurant sector. The overall implication of these findings is that small business owners experience digital transformation mainly as a practical and everyday business activity like adapting to changing customer preferences and competitive forces instead of leaving it to long-term strategy.

Another important finding emerging from the interviews is that participants strongly associated digital transformation with professionalism, legitimacy, and modern business identity. Several owners indeed maintained that having a dynamic online presence contributed to positioning the business as well-structured, legitimate, and capable of competing with other market agents. One participant specifically noted that online booking systems and active social media engagement contributed to creating a more professional image for customers while also improving the overall customer experience. He explained that customers increasingly expect businesses to provide “easy and very fast” services because “people are seeing everything online” (Participant 1). Similarly, the participant 3 viewed digital platforms as valuable opportunities for smaller businesses to compete with larger and more established brands despite operating with limited resources and relatively low investment. She explained that digital technologies enabled the business to “start small and still reach a wide audience” (Participant 3). In addition, this research points to a relationship between digitalization and customer

perception, business image and market positioning not only related to its convenience for operations. Interviewees often mention that customers demand an online presence, fast response and easy to use online services from the company. Therefore, digitalization was often experienced as a necessary response to changing customer expectations and increasing competitive pressure rather than as a purely voluntary technological initiative. Also, these findings indicate that digitalization processes became ingrained in daily routines and decision-making practices for these interviewees. Participants described using digital tools continuously throughout the day for customer communication, scheduling, order management, payment processing, promotion, inventory coordination, and delivery management. Digital technologies were therefore not viewed as separate from business activities but rather as integrated components of daily operations. This integration can be identified more particularly in business where activity is mainly online; digital means have helped businesses to become independent on their place of business operation and the administration of the relation with customer, sales and communication has become virtually only by internet. The results suggest that for SME owners' digital transformation is a daily business process: an integrated and functional procedure for increasing visibility, availability, responsiveness and efficiency, and for maintaining competitive.

4.2 Perceived Effects on Customer Interaction, Operational Efficiency, and Competitiveness

Participants' perceptions of the effects of digital transformation on performance indicate that this transition had generally been positively received. However, participants perceived varying levels of benefits. Participant 1 noted that social media and online booking solutions led to significant improvements in customer acquisition and subsequent revenue generation over time. Participant 2 stated that implementation of digital solutions enhanced operational speed, organization, and scalability and significantly improved sales following development of the firm's website. Participant 3

also noted that the use of digital platforms led to rapid growth; enhanced ability to market products and greater sales generated from promotional activities/campaigns/new product releases. Participant 4 noted that the utilization of digital solutions enhanced customer interaction; improved operational efficiency; and increased the firm's marketing presence. Participant 5 gave the least excited reaction saying however, that a lot of sales were already being made by the use of digital delivery channels by the firm. In general, the study indicates that the digital transformation enhances performance by allowing companies to expand their reach to their customers; be more responsive; and facilitate easier daily operations.

Importantly, respondents saw the outcome of digital transformation going beyond financial performance. Respondents further connected digital transformation to shorter timescales for completing jobs, more effective communication processes, better organizational structures, and lower levels of operational pressure. Participant 2 mentioned that using AI tools and digital tools made the job faster and eliminated more of the manual labor and repetitive tasks. Participant 3 noted that she can now do many things at once and has seen her costs decrease. She attributed this to doing more things digitally. Participant 4 explained that customer communication is now faster (and) it is cheaper to promote your products or services online than via the traditional means. Participant 5 explained that there are other costs involved in the use of digital delivery systems; the other costs are in form of commissions given to third parties. So, on the one hand, participant 5 mentioned that she could raise revenue using the digital systems; however, on the other hand, she mentioned that she could not reduce the costs using the same digital systems. This indicates that the outcomes of the use of digital transformation technologies in small businesses have multiple dimensions. The use of such technologies may result in positive benefits, as well as negative trade-off results. Both will depend upon the specific technologies being utilized and the type of business. The area of greatest impact related to customer experience. Each respondent agreed that their interactions with customers changed due to the introduction of new digital

technologies into their business. For example, in every instance respondent felt that customer interaction occurred faster, was easier and provided more direct contact.

> *"Definitely. Now communication is more direct and fast. Customers can easily ask questions and get instant responses." (participant 3)*

> *"Yes, absolutely. This has completely transformation customer interaction. Communication is now much faster, more flexible, and I must say is more personalized." (participant 4)*

Participants consistently perceived digital technologies as improving customer responsiveness, accessibility, and communication efficiency, allowing businesses to interact with customers more quickly, conveniently, and directly while enhancing overall customer service experiences. Although all participants reported improved customer interaction through digital technologies, the nature of customer communication differed across sectors. Retail-oriented businesses mainly emphasized direct messaging, product promotion, and online engagement through social media, while service-oriented businesses such as the barbershop and bakery focused more on appointment management, order coordination, and personalized customer communication.

Participant 1 added that customers were able to get to the company quickly through social media and were able to manage their own time better through online scheduling. Participant 2 stated that customer interactions became more organized through the web site while still providing a personal element through social media. Participant 3 felt that customer communications happened faster and that customers had immediate access to them through digital channels. According to Participant 4, digital tools also changed the process of communication between customers and her bakery since now customers were able to come up with ideas on how to make a cake, answer questions regarding cake-related issues, etc. Participant 5 also mentioned that digital tools also brought some degree of convenience to busy or introvert customers who did not want to enter a

restaurant. This implies that customer satisfaction was enhanced through the increased accessibility and efficiency of digital customer interaction.

Participants also differed in how they perceived competitive advantage through digital transformation. Smaller independent businesses viewed digital platforms as opportunities to compete with larger brands despite limited resources, whereas the franchise-based restaurant primarily viewed digital systems as necessary tools for maintaining market relevance and customer accessibility.

Regardless of the above-mentioned challenges, all participants believed that digital transformation has increased their companies' competitiveness. Participant 1 attributed improved professionalism through social media and online bookings for attracting customers. Additionally, he noted that other businesses have successfully attracted numerous customers via social media regardless of poor service. Participant 2 said digital tools and AI helped her in maintaining competitiveness by allowing her business to reach more customers; respond quicker to inquiries and work more efficiently. Participant 3 felt that digital transformation enabled her to compete against larger brands due to her smaller business format. Participant 4 correlated digital transformation with faster response times to customer inquiries; improved marketing capabilities; and increased visibility. Participant 5 correlated competitiveness with continuous upgrades to existing systems; utilizing online promotions; and providing appealing deals to customers. Participants generally perceived digital visibility as an essential component of competitiveness, as maintaining an active online presence increased customer reach, strengthened business legitimacy, and improved market accessibility in increasingly digital marketplaces. Therefore, competitiveness in this study was not connected to advanced technology, but to visibility, responsiveness, customer reach, and the ability to appear active and professional in digital spaces.

The findings of this analysis can be understood using the Technology–Organization–Environment (TOE) framework which is used to explain the influence of various contextual factors on the use and adoption of digital technologies of small businesses.

With a technological view, the participants found digital solutions like social media platforms, digital payment systems, online ordering applications and communication apps to be easily accessible, user-friendly and helpful for their business operations and customer communication. On the organizational side, the readiness of the owners, digital skills, time availability and finances were significant factors that impact the success of business in adopting digital technologies into daily operations. Flexibility and learning ability seemed to be a characteristic of businesses that were better suited to deal with digital changes. Lastly, the environmental aspect was seen in customers' expectations, in competition, or in market trends, all of which prompted business owners to keep their online presence and be agile, reacting in a timely manner via digital channels. Therefore, the results point to the fact that digital transformation in small businesses extends beyond technology to interact between technological opportunities and organizational readiness and environmental pressures.

4.3 Innovation, Owner Readiness, and Challenges

In addition, the research showed that digital transformation facilitated innovation in service development and evolution of business models in small businesses. In some instances, the change was apparent. The extent of innovation also differed among participants. Participant 2 demonstrated the highest level of technological innovation through the adoption of AI tools, chatbot systems, and automation processes, whereas other participants implemented more gradual innovations focused on communication, online ordering, and digital marketing practices. According to Participant 4, the bakery shifted to rely more on social media marketing and direct-to-consumer online communication. The business introduced custom cake orders based on what customers viewed and purchased online. Some respondents reported substantial changes in their business models, whereas others reported more subtle changes. Participant 1 felt compelled to implement online booking as a need considering that customers were demanding more and more appointment-based service. Participant 5 observed less influence over business model evolution since the franchise structure limits local decision-making capacity. Nevertheless, she admitted that digital delivery evidently

transformed the interaction of customers with the restaurant. These findings suggest that as small businesses are being digitally transformed. The participants did not specify how they completely transformed their businesses, but instead they talked about smaller transformations in communication, service delivery, ordering, marketing, and customer support.

The other significant discovery is that the human and organizational variables, especially the role of the owner greatly affect the digital transformation in small businesses. In all five of the interviews, the owner or principal interviewee was primarily accountable for implementing, learning, or overseeing the implementation of digital tools. Therefore, digitalization was very much dependent upon the owner's willingness to learn and adapt. Participants in each of the five interviews described initial difficulties in learning to use and properly operate digital systems under the time constraints of daily operation. As an example, Participant 1 stated that in the initial stages, his main problem was how to use the reservation system and payment system correctly and not to make any mistakes (i.e., miss an appointment). Participant 2 revealed that his employees had learned to adapt fast, but they had to learn to use digital marketing strategies, how to produce content to be used on digital platforms, how to operate websites, and how to use artificial intelligence (AI) applications successfully. The same needs of employee learning were also observed by Participant 3: the development of content, online communications management, customer interaction management. Participant 4 mentioned that initially, some of the employees had been reluctant because of a lack of understanding of digital processes, but this reluctance eventually declined as the benefits became clear. Participant 5, too, had quite a short learning curve in relation to the processing of orders and time parameters in the restaurant system. Thus, overall, the data collected demonstrate that digital transformation in small businesses is contingent upon not just the technology itself but also learning efforts, confidence levels, and daily operational adaptability.

There are also major obstacles to digital transformation. In particular, the key challenges were low budgets; a lack of technical know-how and experience; and the inability to acquire the required skills to familiarize themselves with new operating systems without interrupting the regular business operations. Participant 1 listed multiple examples of barriers he experienced as follows: failure of payment systems, internet connectivity issues, confusion using the booking system; and costs associated with utilizing digital payment and booking services. Participant 2 listed limited budget and lack of technical knowledge as the two biggest barriers she faced; thus, improving functionality needed to occur incrementally over time. Participant 3 listed the expense of marketing specifically paid advertisements; along with the difficulty of learning how digital marketing operates. Participant 4 noted additional barriers related to logistics (delivery), as cakes are fragile and perishable requiring special care in packaging and shipping. Participant 5 identified barriers relative to franchisor coordination (e.g., changes in offerings and menus); along with a need to maintain awareness of decisions being made by the corporate entity. Overall, these findings suggest that, while barriers to digital transformation may exist at a generic level among small businesses; these barriers can develop into specific business-related challenges.

While all participants experienced learning and adaptation difficulties during digital transformation, the nature of these challenges varied according to business type and operational structure. Retail businesses mainly emphasized digital marketing costs and maintaining online visibility, whereas the bakery business faced logistical challenges related to delivery management and preserving product quality during transportation. The restaurant business encountered coordination difficulties associated with third-party delivery platforms, commission fees, and franchise-related operational limitations. These findings suggest that the challenges of digital transformation are not uniform across SMEs, but are strongly influenced by industry characteristics, operational requirements, and organizational structure. Although participants shared similar concerns regarding learning and adaptation, the practical difficulties they experienced differed according to the nature of their business activities.

Lastly, the findings demonstrate that digital transformation experiences differed depending on business type, operational structure, and level of digital integration. all participants perceived digital transformation as an on-going process rather than a completed process. Many of the participants who were currently utilizing several digital tools showed an interest in adding more technological tools in the near future. Participant 1 expressed an interest in AI-powered customer chat systems and robotic cleaning systems. Participant 2 planned to add more advanced AI-powered chatbots; product recommendation software; automated inventory management software; and enhanced AI-supporting marketing capabilities. According to participant 3, she intends to open a site; add more paid advertising; upgrade order/delivery processes; and possibly even internationalize. Participant 4 was interested in creating an AI-based customer support system; automatic order tracking; recommending personalized cake choices based on customer preferences; and potentially a web-site or mobile app that would allow customers to directly take orders. Participant 5 could not say definitively which types of systems she would implement next, but mentioned potential self-service systems; upgraded advertising; and/or robotic cleaning assistance systems. Overall, these statements illustrate that entrepreneurs continue to view continued digitalization as a means to achieve long-term growth; yet, remain selective and practical about which technologies are worth investing in.

4.4 Summary of Major Findings

Particular	**Main finding**	**Example from participants**
Digital adoption	Small businesses mainly adopt practical and low-cost digital tools	Social media, booking systems, online ordering, digital payments
Business performance	Digital tools improved visibility, communication, and in many cases sales	Participants reported customer growth, easier promotion, and faster operations
Customer experience	Customers are satisfied and expect faster, easier, and more convenient service	Quick replies, easy booking, online ordering, secure payments

Innovation and business model change	Digitalization supported incremental service and business model changes	Hybrid sales, chatbot support, customized offers, trend-based products
Organizational factors	Owner readiness and learning were central to digital adoption	Owners had to learn tools, manage systems, and guide staff
Barriers	Cost, technical knowledge, time pressure, and system coordination remained major barriers	Marketing costs, delivery issues, training needs, technical setup problems
Competitiveness	Digital presence improved visibility and market reach	Participants believed less digital businesses struggle more
Future outlook	Participants viewed digital transformation as ongoing	Interest in AI chatbots, websites, automation, order tracking, robotic cleaning

Table 2. Summary of major findings

5 Discussion

5.1 Theoretical Contribution

The results from this research indicate that digital technologies are an important part of the everyday operations, customer service, competitiveness, and responsiveness of the small business. The findings also suggest that the experiences of small business owners are not the same as that of large scale and organization wide digital transformation processes that have been explored in previous literature. In previous research, digital transformation has been defined as a strategic transformation that implies organizational change, redesign of the business model and a significant incorporation of technology (Vial, 2019; Verhoef et al., 2021), but in this study, digital transformation in small enterprises is seen more as an operational one that gradually integrates technology into daily business processes. The tools and resources used in this study were mainly digital tools for communicating, marketing, interacting with customers, making bookings, placing on-line orders, handling on-line payments, coordinating deliveries and having an on-line presence.

The findings therefore suggest that many SMEs experience digital transformation through operational digitalization practices rather than through radical organizational transformation. This finding supports the argument of Nadkarni and Prügl (2021) that digital transformation should be understood as an adaptive socio-technical process rather than solely as technological implementation. At the same time, the findings differ from literature focusing on large organizations where digital transformation is often treated as a formal strategic initiative with organization-wide restructuring processes (Vial, 2019). In the context of the present study, transformation was instead visible through incremental digital adaptation integrated into routine business operations.

The results also indicate that digital technologies had a positive impact on the functioning and profitability of SMEs. Participants felt digital tools were linked to

increased visibility, promotion ease, reach, speed of communication and increased sales potential. The results are consistent with the previous studies suggesting that digital technologies can enhance efficiency, responsiveness, and resource utilization within organizations (Zhang, 2025; Kothapalli, 2022). Among other things, companies could communicate with customers more efficiently and coordinate their daily operations more easily, thanks to social media platforms, online payment systems, communication apps, and delivery platforms. But it also shows that there are no magical outcomes of digital transformation – and not everyone will see the same. Unlike some prior studies that present digital transformation as a direct source of competitive advantage and organizational improvement (Verhoef et al., 2021), the current study demonstrates that the outcomes of digital transformation in SMEs are strongly dependent on practical business conditions, owner readiness, affordability, and the ability to integrate digital tools into existing operational routines. Several participants emphasized that digital technologies also introduced additional costs related to advertising, platforms, and technical support. Therefore, the study supports the argument of Vial (2019) that technological adoption alone does not guarantee successful transformation outcomes unless technologies are effectively integrated into organizational practices.

Another significant finding concerns customer interaction and customer experience. The results suggest that one of the most apparent and direct aspects of digital transformation is the customer dimension in small enterprises. It is noted that all the participants emphasized that digital technologies had contributed to the speed, accessibility, convenience and responsiveness in communication with customers. Ordering systems, social media communication, online booking, digital payment solutions made communication easier and allowed businesses to be open around the clock. The results are in line with the literature that has highlighted the advantages of digital transformation in terms of improving customer experience by facilitating more flexible, faster, and customer-centric interactions (Lemon & Verhoef, 2016; Oyekunle & Boohene, 2024). The findings also align with the arguments of Paul et al. (2024) that customer expectations are becoming more and more demanding and increasingly

business should need to have an active presence in the digital world and have means for quick communication. However, the present study extends previous literature by demonstrating that for SMEs, customer-related digitalization is not necessarily part of a formal customer experience strategy. Instead, digital adaptation often occurs reactively in response to changing customer expectations and competitive market pressures.

Furthermore, the findings illustrate that digital transformation in SMEs is closely associated with incremental innovation and practical adaptation rather than radical innovation. Participants described gradual changes such as online booking systems, hybrid online-offline services, mobile order collection, chatbot usage, and customer-driven service adjustments. These findings support earlier research arguing that digital transformation may foster process innovation, service innovation, and business model adaptation (Kotarba, 2018). At the same time, the study demonstrates that innovation within SMEs emerges primarily through experimentation and practical adaptation rather than through structured innovation strategies. Unlike large organizations that may implement formal innovation programs and digital transformation strategies, the SMEs in this study relied on continuous adjustment to customer needs, operational challenges, and market trends. This finding extends existing literature by suggesting that digital transformation in small businesses is often informal and operationally embedded rather than strategically formalized.

The findings also highlight the significance of organizational and human factors in the context of digital transformation. Owners of the businesses in most of those that took part were very active in implementing new technologies, learning new tools, training staff, and coordinating implementation processes. The critical role that leadership, organisational adaptability and employee readiness play in successful digital transformation (DT) is consistent with previous studies (Nadkarni & Prügl, 2021; Westerman et al., 2014). Unlike larger companies where digital transformation might be spread across departments or digital units, SMEs seem to be very reliant on the owner/manager's willingness and capacity to learn and experiment with digital

technologies. The results, therefore, confirm the organizational dimension of TOE, which suggests that the managerial readiness, internal capabilities and resource availability have a significant impact on technology adoption and implementation (Oliveira & Martins, 2011). Furthermore, the results indicate that the owner's self-confidence, flexibility and willingness to learn have a direct impact on the successful implementation of digital technologies into business processes.

The study further demonstrates that barriers to digital transformation continue to affect small businesses significantly. Participants identified limited financial resources, insufficient digital skills, time constraints, technical learning difficulties, platform dependence, and operational restrictions as major challenges. These findings align with SME-focused digital transformation literature which emphasizes that SMEs often struggle with technological complexity, limited expertise, and financial limitations (Omowole et al., 2024; Joel et al., 2024). However, the findings also suggest that barriers differ depending on business type and operational context. While some businesses experienced difficulties related to advertising costs and technological investment, others struggled with platform access, coordination with external companies, or maintaining service quality alongside digital operations. Therefore, this study extends previous research by demonstrating that although general SME barriers exist, the practical manifestation of those barriers is highly context dependent.

Another important finding relates to competitiveness. The participants always connected their digital presence with improved competitiveness, visibility and customer reach. Digital technologies were seen as providing quicker communication, better access for customers and increased market visibility for businesses. The results align with the existing literature that emphasises how competitiveness could be achieved via digital transformation by engaging customers, responding to the market, and gaining the visibility of digital transformation (Joel et al., 2024). However, the results also suggest that complexity of technology is not necessarily associated with competitiveness in SMEs. Instead, competitiveness was more closely related to maintaining accessible and visible

digital presence. This finding differs from some digital transformation literature that emphasizes advanced technologies and strategic digital capabilities as primary drivers of competitiveness (Verhoef et al., 2021). In the context of small businesses, simple and affordable digital tools appeared sufficient to improve customer access and market responsiveness.

The findings additionally reinforce the relevance of the Technology–Organization–Environment (TOE) framework utilized in this study. The empirical findings demonstrate that digital transformation in SMEs is shaped simultaneously by technological opportunities, organizational readiness, and environmental pressures. Figure 5.1 summarizes the interpretation of the findings through the TOE framework. The technological dimension includes practical digital tools such as digital marketing platforms, social media applications, digital payment systems, online booking systems, websites, delivery platforms, AI-supported applications, and customer communication tools. These technologies support customer interaction, service delivery, operational coordination, and market visibility. The organizational aspect emphasizes the need for owner readiness, employee learning, organizational flexibility and practical fit between technology and business needs. The results indicate that the extent to which business owners are willing, confident and competent to test and adopt digital technology to their day-to-day business activities is a critical factor in the success of digital transformation in SMEs. The environmental dimension takes into account what customers expect, competitive pressure, digital trends, and demands from markets for visibility and responsiveness in the online world. Participants highlighted the need to stay connected digitally to attract customers and be competitive in evolving business environments. Moreover, the interpreted model shows that the barriers of digital transformation in SMEs are related to financial resources, digital skills, technical problems, learning challenges and platform dependency. The benefits of digital transformation, therefore are not guaranteed and rely on the successful implementation of practical issues and changes in the organization by the small business owners.

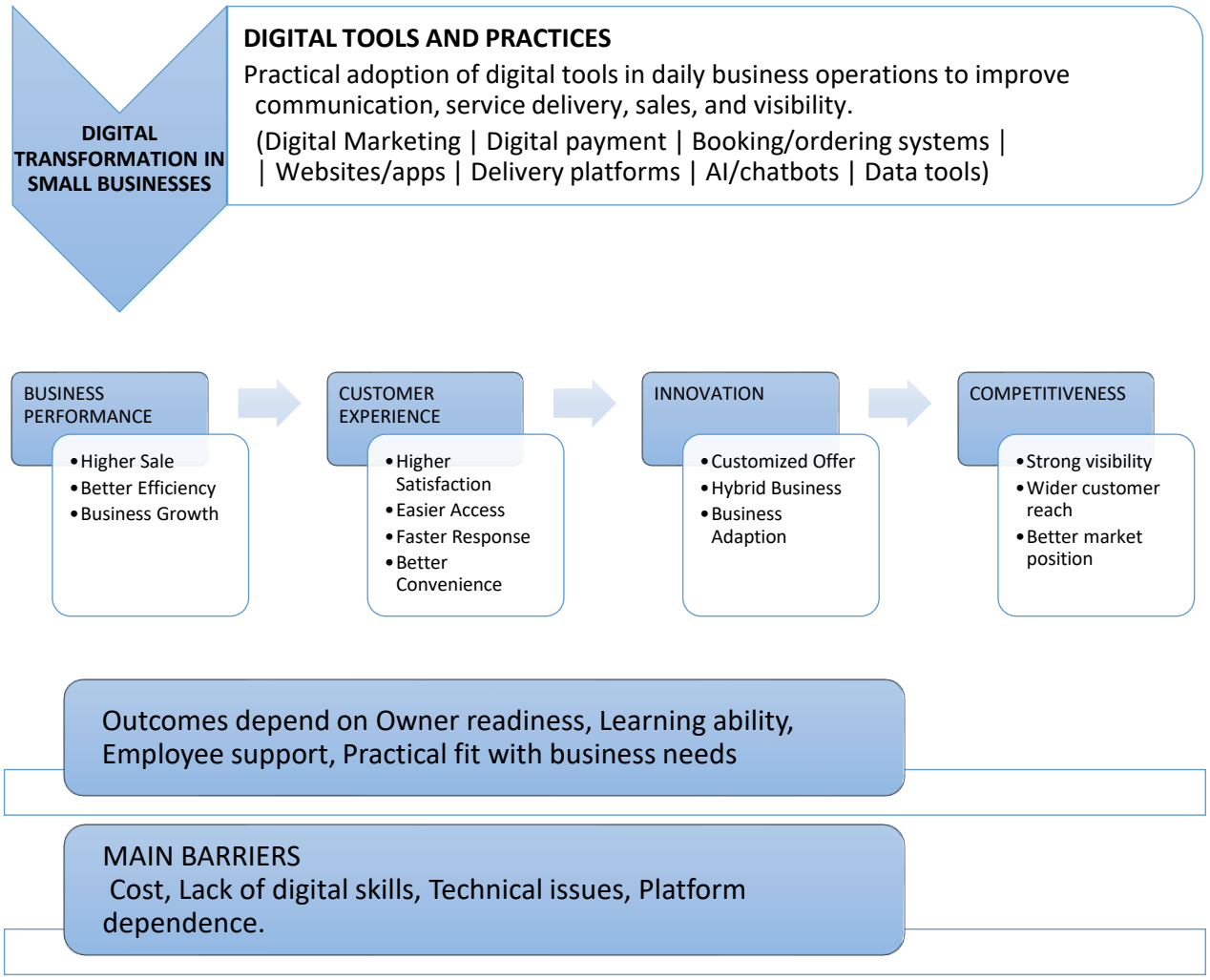

Figure 3. Interpreted model of digital transformation in small businesses

Overall, this study contributes to existing literature by demonstrating that digital transformation in small businesses is experienced differently from the formal strategic transformation processes frequently discussed in prior research. Rather than large-scale organizational restructuring, SMEs experience digital transformation primarily through operational digitalization practices integrated into everyday business activities. The findings demonstrate that digital technologies may positively influence customer interaction, operational efficiency, competitiveness, and adaptability. However, the outcomes of digital transformation remain strongly dependent on owner readiness, organizational flexibility, resource availability, and environmental conditions.

5.2 Managerial Implication

This study offers some managerial lessons for small business managers in the ongoing process of digital transformation in the business. First of all, the results indicate that digital transformation in small businesses should be a slow and strategic process depending on the needs of the business and the resources available to them. Many participants saw digital technologies not as solutions with benefits for the customer, but essentially as operational tools; accordingly, managers should focus on technologies that have a direct impact on customer communication, coordination, visibility and accessibility to the service. The results also demonstrate that digital transformation in SMEs can occur without the use of costly and sophisticated technological systems to achieve significant results. Social media platforms and communication apps, digital payment systems, booking and delivery apps were seen as useful and readily available digital solutions that can enhance customer interaction and stay competitive. Hence, small business owners can obtain better solutions by opting for technologies which deliver a quick and practical effect than by trying to install a more complex digital system.

Another significant implication relates to the importance of the readiness of the owner, the involvement of employees, and lifelong learning in digital transformation processes. The results show that the owner him or herself can also be a key figure in learning, implementation and management of digital technologies in SMEs. Managers need to continually build their own digital skills and consider experimentation and adaptation. Within the small business context, it seems that the owner's willingness to learn plays an important role in the degree of their embedding digital technologies into their routine. Further, the results indicate that employee involvement and organizational flexibility are crucial in the context of digital transformation. While some SMEs might not have formal digital departments or a formal transformation programme, their owners can make sure that their employees are well supported, communicated to and given hands-on advice when implementing new digital tools. Ongoing learning and adaptation can help to minimize the push back of change and enhance operational coordination.

Furthermore, the results show that customer expectations are now increasingly that the business has an active digital presence and quick communication channels. So, it's important for small businesses to make themselves responsive, available, and visible online as part of their competitive strategy. The results indicate that it might be more relevant to have a high digital presence than to use very sophisticated technologies. The study also identifies some practical challenges, which managers should take care while embarking on the path of digital transformation. Accessibility constraints such as a lack of digital skills, technical complexity, and time constraints remain a barrier to digitalisation in SMEs. In this sense, managers should implement technologies by stages and test the potential operational and financial value of new digital investments before they are implemented.

5.3 Limitations and Suggestions for Future Research

This research adds to the knowledge of digital transformation experiences in small businesses, but it has a number of limitations which should be recognised. The first reason is that the study was carried out as a qualitative research method with a small sample of five small business owners. Thus, the results are limited to the experiences and perceptions of the participants and cannot be considered representative of all SMEs. Furthermore, the study was conducted primarily in service-oriented and retail-oriented small businesses including salons, restaurants, online retail business, jewellers, cake shops, etc. This means that the findings might not be representative of a full digital transformation experience in other industries, manufacturing sectors or larger organizations.

Another restriction is the type of data gathered in this study. Results are subjective rather than objective, that is, they depend on participants' perceptions and experiences. Particpants reported positive outcomes for customer interaction, efficiency and competitiveness, however no measurable financial and operational performance data

was reported in the study to provide objective evidence of these outcomes. Moreover, the results indicate that digital transformation is frequently realized by means of operational digitalization practices instead of radical organizational change in SMEs. The study tends thus to be more representative of the early- or incremental stages of digital transformation rather than of the more extensive, strategic transformation processes found in the literature.

A quantitative or mixed method research approach might be used in future studies on digital transformation in SMEs, in the context of exploring relationships between digital technology adoption and business performance indicators that can be measured, including revenue growth, operational efficiency, customer retention, or competitiveness. Furthermore, future research could examine the digital transformation experiences in other industries and areas to compare the impact of the environment, market structure and organizational characteristics on the digital transformation of SMEs.

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Appendices

Appendix 1. Semi-Structured interview questions

Section A: Background

- Can you briefly describe your business and your role?
- How long has your business been operating?

Section B: Digital Transformation Adoption

- What digital technologies do you currently use in your business? (e.g., social media, online booking, e-commerce)
- When did you start using these technologies?
- What motivated you to adopt digital tools?

Section C: Impact on Business Performance

- How has digital transformation affected your business performance?
- Have you noticed changes in:
    - Sales or revenue? Efficiency or cost savings?
- Can you give an example?

Section D: Customer Experience

- Has digital technology changed how you interact with customers?
- Do customers expect more digital services now?
- How has this affected customer satisfaction?

Section E: Innovation & Business Model

- Have you introduced any new services or products because of digital technologies?
- Has your business model changed (e.g., online sales, bookings)?

Section F: Organizational Factors

- How did your employees react to digital changes?
- Did you need new skills or training?
- What challenges did your team face?

Section G: Barriers & Challenges

- What difficulties did you face when implementing digital technologies?
- Were there financial, technical, or employee-related challenges?
- How did you overcome them?

Section H: Competitiveness

- Do you think digital transformation has improved your competitiveness?
- How do you compare with competitors who are more/less digital?

Section I: Future Outlook

- Do you plan to adopt more digital technologies in the future?
- What kind?

Appendix 2. Coding Table from Interview Data

Participant & Raw Data/Quote	**Initial Code/ Category**	**Main Theme**	**TOE Dimension**
“We are using social media like TikTok, Instagram, Facebook… online booking system and digital payment.” -Participant 1	Adoption of digital tools	Digital technologies in daily business practice	Technology
“It affected our business very positively… we are getting more and more customers.” - Participant 1	Increased customer growth through digitalization	Effects on competitiveness and performance	Environment
“People have seen my video… that’s why they came.” - Participant 1	Digital marketing effectiveness	Customer interaction and competitiveness	Environment

“They can manage their time very well.” - Participant 1 discussing online booking	Convenience for customers	Customer experience	Technology
“The difficulty was to understand how the stuff is working and to have everything in place like internet and the laptop and the devices...” – Participant 1	understanding digital technologies	Organizational readiness and practical challenges	Organization
“We use AI for caption and product description and marketing content.” – Participant 2	AI-supported operations	Innovation and operational efficiency	Technology

“Google Drive for product data and Excel for stock management.” – Participant 2	Digital data management	Operational efficiency	Organization
“To reach the customers, save time and reduce manual work.” – Participant 2	Customer attraction, time saving and reduced manual work	Digital transformation drivers	Organization
“Operations are faster, more organized, and easier to scale.” – Participant 2	Improved business performance and operations	Operational efficiency and Effects on business performance	Organization
“Customers expect faster replies, easy ordering, and a smooth experience.” – Participant 2	Customer demand for convenience	Customer interaction	Organization

“We use Facebook and Instagram for digital marketing.” – Participant 3	Digital marketing effectiveness	Digital technologies in daily business practice	Technology
“Digital platforms made it possible to start small and still reach a wide audience.” – Participant 3	Low investment and accessibility of digital business model	Competitiveness	Environment
“We can promote products instantly and reach customers anytime.” – Participant 3	Instant communication with customers and digital marketing	Customer interaction/engagement	Technology
“Operations are more efficient and costs are lower because most of our work is handled online.” – Participant 3	Reduced operational costs	Operational efficiency	Organization

“We started offering customized order and limited collection based on online trends.” – Participant 3	Innovation from digital trends	Innovation from digital trends	Environment
Yes, especially in terms of marketing costs like boosting is a little bit costly and learning new tools.” – Participant 3	High digital marketing costs and difficulty learning new tools	Practical challanges	Organization
“We mainly use Facebook for product promotion, customer communications and order collection.” – Participant 4	Digital marketing effectiveness	Digital technologies in daily business practice	Technology

“Customer demands for online communication increased.” – Participant 4	Customer demand for convenience	Drivers of digital transformation	Environment
“It has improved our operational efficiency and increased customer engagement.” – Participant 4	Improved efficiency and customer engagement	Operational efficiency and Effects on business performance	Organization
“Online promotion is more affordable compared to traditional advertisement.” – Participant 4	Lower marketing costs	Operational efficiency	Organization
“Customers now expect instant reply, secure payment options, and smooth ordering process.” – Participant 4	Customer demand for convenience	Customer interaction	Environment

“Yes, absolutely. We needed to learn social media communications, online customer management, and digital payment handling.”– Participant 4	understanding digital technologies and need to learn digital skills and online systems	Organizational readiness and challenges	Organization
“We use Facebook for marketing.” – Participant 5	Digital marketing effectiveness	Digital technologies in daily business practice	Technology
“We have to pay a certain amount of percentage for using their application.” – Participant 5	Financial challenges of digital platforms	Practical challenges	Organization