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Digitalization and Sustainable Competitive Performance in Small–Medium Enterprises: A Moderation Mediation Model

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Abstract: Research on the relationship between digitalization and firm performance has grown exponentially over the past decade. However, most studies in this area have concentrated on large firms, focusing on IT capabilities in developed markets. The exploration of how digitalization drives sustainable competitive performance in emerging SMEs remains a largely uncharted territory. Specifically, the mechanisms through which digital strategy enhances digital capability and, in turn, leads to sustainable competitive performance in manufacturing SMEs, have received limited attention. To bridge this gap and contribute to the literature, we conducted a survey involving 376 manufacturing SMEs and employed SPSS.25 and AMOS.24 for data analysis. Our results indicate that digital strategy positively influences the sustainable competitive performance of manufacturing SMEs, with this relationship being partially mediated by digital capability. Additionally, we found that digital culture plays a reinforcing role in the connection between digital strategy and digital capability. This study contributes to the literature on dynamic capability by highlighting the significance of digital strategy and digital culture as antecedents to sustainable competitive performance, with digital capability acting as an intervening variable for manufacturing SMEs. The findings show that SMEs should promote digital culture and strategies that in turn enhance their digital capability and sustainable competitive performance in the dynamic markets.

Keywords: digital strategy; digital capability; digital culture; SMEs; sustainable competitive performance



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1. Introduction

Sustainable competitive performance (SCP) demonstrates a firm's superior outcomes over competitors that endure over the long term and have a rare chance of decline [1]. SCP stands as an everlasting goal for businesses, regardless of their size, age, or operational nature [2–4]. However, the strategic framework to achieve sustainable performance constantly changes over time—underlying various phenomena, such as the digital era, pandemics, climate change, and crises [5,6]. Scholars in this perspective react on time to study and recognize determinants that fulfill organizational needs [7,8]. Considering the digital phenomenon, scholars have deeply studied the interaction of digitalization and performance in business industries, employing several mediators and moderators [9–13]. These studies have helped organizations through useful policy implications, contributed to the literature, and enriched the body of knowledge in the relevant context. Reflecting this interest, research on the relationship between digitalization and sustainable performance has grown significantly yet remains fragmented and insufficient for the overarching implications.

Over the past decade, there has been a growing body of research placing greater emphasis on the role of digital technologies [14], digital innovation [15], digital platform [16], big data [17], digital transformation, and digital services [18] in organizational performance. These studies have been conducted in various types of organizations, including small, medium, large, manufacturing, trading, and services firms, resulting in diverse policy and practical implications. Despite the significant increase in research on digitalization and sustainable performance, these two research streams have not been thoroughly and distinctly investigated. In particular, there is a need to address two major shortcomings in the literature. First, upon reviewing the existing literature on digitalization and business performance, it becomes evident that majority of the studies have been conducted in European markets [19–21]. Thus, due to cultural differences, environmental factors, and regulations [19,21], the insights of these studies do not significantly fit Asian markets. Hence, it is necessary to understand the uniqueness of digitalization in business firms operating in emerging economies. Second, previous studies have tested the role of various digital determinants, either directly or indirectly emphasizing large firms [18,22]. The limited generalizability of these implications does not effectively support small businesses in the current digital era, considering the diverse phenomena they encounter. Consequently, there is a pressing need for additional, distinct investigations that can aid small businesses in understanding the most effective digital strategies for SCP. To contribute to the literature and provide guidance to small businesses' top management teams, we delve into the role of digital strategy in SCP, with a focus on the mediating role of digital capability and the moderating role of digital culture. In other words, the main aim of this study is to examine the nexus between digital strategy and SCP with the mediating role of digital capability and the moderating role of digital culture. To address these research objectives, this study answers the following research questions: (1) Does digital strategy influence SCP of SMEs? (2) Does digital capability mediate the nexus between digital strategy and SCP of SMEs? (3) Does digital culture moderate the relationship between digital strategy and digital capability?

Digital strategy is defined as “a business strategy, inspired by the capabilities of powerful, readily accessible technologies, intent on delivering unique, integrated business capabilities in ways that are responsive to constantly changing market conditions” [23], and it has received significant attention of scholars in recent years, particularly in small businesses [24,25]. For instance, Ukko and Nasiri [26] deem digital strategy as a main indicator of profitability in small businesses in the current era. Similarly, several studies highlight digital capability as a significant factor in SMEs' performance. Wang, Gu [27] note that capability plays an essential role in the performance of manufacturing firms. However, it seems that digital strategy configures operational activities by empowering internal processes of small businesses that lead to high productivity. Nevertheless, due to the poor connection between digital strategy and firm performance, studies have discussed moderating and mediating factors [26,28,29]. For example, Martínez-Caro, Cegarra-Navarro [30] assert that digital culture plays a pivotal role in enhancing the impact of digital technologies on firm performance, emphasizing its significance as a critical factor influencing the relationship between digital technologies and firm performance.

This research enriches the body of literature on digitalization and business performance in two ways. First, we overcome the shortcomings in the existing literature by employing the role of digital strategy in SCP through the mediating role of digital capability and the moderating role of digital culture. We empower it through the empirical evidence gathered from SMEs operating in Pakistan. The geographic network of Pakistan shows strong connections with other Asian countries (India, China, Russia, and Iran), yet poor with Europe. Moreover, more than 90% of SMEs in Pakistan [31] but research on digitalization in the aforementioned industry is poor. SMEs in Pakistan strongly focus on digital capabilities to innovate their business model for international performance [32]. Hence, studying the unique role of digital strategy, digital capability, and digital culture in the sustainable performance of SMEs would endow the policy implications.

Second, our research contributes to the dynamic capability (DC) theory [33,34], which demonstrates that certain capabilities assist enterprises in altering their useful resources (internal and external) and quickly accessing new information to gain long-term competitiveness by using internal skills and capabilities (i.e., digital skills, knowledge, attributes, information, etc.) [33]. While testing the theory, studies have revealed that business capabilities and strategies add to the performance [35]. However, this theory has rarely been touched on in integrated frameworks, elaborating the uniqueness of digital competencies in SCP in emerging SMEs. Hence, this study contributes to the DC theory through empirical evidence based on SMEs operating in emerging economies.

Based on a sample of 376 manufacturing SMEs, using SmartPLS, we found that digital capability mediates the nexus between digital strategy and SCP. Furthermore, the findings demonstrated that digital culture significantly strengthens the relationship between digital strategy and digital capability. Additionally, the insights of this research will facilitate policymakers and top managers of SMEs in understanding the most influential determinants of digitalization in SCP.

The rest of the article is structured as follows. Section 2 explains the theoretical background, Section 3 shows the hypothesis development, Section 4 elucidates the method and measurement of variables, Section 5 discusses the empirical findings and results, Section 6 illustrates the discussion and implications of the study, and the section also presents the conclusion and limitations of the study.

2. Theoretical Background

Grounded in the DC theory, this research scrutinizes the role of digital strategy, digital capability, and digital culture as internal capabilities of enterprises to achieve SCP. DC theory—an extended version of resource-based view (RBV) theory—includes non-replicated capabilities of firms to sustain in the long run by rapidly responding to changes in highly uncertain business environments. With a rapid rearrangement of resources and capabilities, firms can respond to technological advancement to maintain a sustainable position [36]. A DC theory has been considered one of the most important theories in the field of business and technology management research [37–40]. According to Teece, Pisano [41], dynamic capabilities are defined as “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments”. These capabilities focused on “the development of management capabilities and difficult-to-imitate combinations of organizational, functional and technological skills”. However, some studies have highlighted the resource-based view as a key element in transforming resources into SCP, e.g., [37,42,43]. The theory illustrates that “firms have unique resources, capabilities, information, attributes and knowledge which help them to formulate more effective and efficient strategies to sustain for the long term in the market” [44]. The fundamental idea of RBV theory postulates that enterprises sustain their position for a longer period due to the unique and inimitable resources and skills over their competitors [44].

DC theory suggests that capabilities assist enterprises in altering their useful resources (internal and external) and quickly accessing new information to gain long-term competitiveness by using internal skills and capabilities (i.e., digital skills, knowledge, attributes, information, etc.). Dynamic capability enables enterprises to promptly adapt to external market changes and internalize skills and embedded knowledge, contributing to their long-term success [33]. Moreover, recently, authors have claimed that digitalization strategies assist enterprises in utilizing digital resources, which in turn improves their sustainable performance [40]. The digital strategy is an internal capability that facilitates organizational digital activities and processes according to the dynamic business environment to achieve superior performance in the long run [25]. Thus, the digital strategy and digital capability of an enterprise (skills, knowledge, etc.) collectively contribute to a firm’s long-term success [45]. Therefore, we argue that digital strategy, digital capability, and digital culture are harmonious and mutually reinforce each other in attaining sustainable performance. However, despite the extensive debate on DC theory, the importance of digital strategy in

SCP and digital capability is poorly explored. Hence, this research enriches the existing knowledge and adds new insight to the DC theory literature concerning the nexus between digital strategy, digital capability, digital culture, and SCP.

3. Hypotheses Development

3.1. Digital Strategy and Sustainable Competitive Performance

In the current competitive environment, sustainability is a significant task for enterprises, since sustainability is defined as “a firm’s management to effectively organize business operations such as internal and external adhering sustainable development” [3]. Sustainable performance refers to the “ability of an organization to meet the current and future needs of its stakeholders in a socially, economically, and environmentally responsible manner” [1]. Attaining sustainable performance is a prominent facet for enterprises to sustain in the long run in a turbulent atmosphere [46]. Sustainability enables businesses to cut back on expenses and the consumption of essential resources while emphasizing the reuse of resources through recycling [47]. In order to lessen the environmental impact and energy consumption, it is crucial to produce and deliver such commodities that are equally beneficial for the environment and society [48]. By adopting sustainable strategies, SMEs can create a synergetic situation from which both the environment and the SMEs can gain a return [49].

A digital strategy can be thought of as an organizational plan that makes use of digital products to produce differentiating value [50]. Ross, Beath [23] define it as “a business strategy, inspired by the capabilities of powerful, readily accessible technologies, intent on delivering unique, integrated business capabilities in ways that are responsive to constantly changing market conditions”. A digital strategy is one of the most significant tools for assimilating digitalization in businesses for those enterprises who want to be successful in the digital era [32].

In the past few years, digitalization has significantly influenced the business environment, leading to the development of digital strategies that are aimed at enhancing sustainable performance [51].

In order to be competitive in today’s digital environment, ventures must be able to progress toward sustainability, resource efficiency, and the effective use of digital technologies [52]. Due to globalization and a tough competitive environment, SMEs need digital tactics so they can overcome challenges and gain positive outcomes [53]. Among other elements, digital strategy has been regarded as one of the most crucial factors for gaining SCP in the modern era, because technological advancement and digitalization fortify challenges to sustainable business activities [54].

Digital strategy has become a dominant strategy for SCP. It is argued that enterprises with compact digital structures are in a better position to achieve SCP [55]. Similarly, Canhoto, Quinton [56] reveals that digital strategies are the main method for gaining a competitive edge over other firms in a longer period. Furthermore, Watson IV, Weaven [57] posit that technological know-how is the most vibrant strategy of both domestic and export businesses. Most organizations use digital strategy and digital tactics to strive in turbulent markets [58]. Those firms that possess a superior digital strategy are in a better position to effectively and efficiently take advantage of the digital knowledge [50]. In another study [59], it was found that technology adaptation positively contributed to the sustainable performance of SMEs during the crisis period of COVID-19.

Digital strategy is one of the important predictors of enterprise innovation and financial performance, but it has been little researched [60]. Subsequent studies have further examined the nexus between digital strategy and sustainable performance. For instance, Ramanathan, Philpott [61] conducted a study of a UK-based retailer and found that technological strategies such as big data analytics can enhance the sustainability performance by improving resource efficiency and reducing waste. Additionally, Anwar, Scheffler [32] stated that SMEs with digital technological tactics for sharing information online standardize their presence in local as well as foreign markets. Enterprises with a good digital

strategy performed better compared to those with weak and poor digital strategies [62]. Digital strategies significantly improve firm performance [63] and diminish barriers and threats on the way to sustainable performance [64].

A lack of digital skills and low digital knowledge hamper SMEs from attaining sustainable performance [65]. In turbulent markets, digital strategies can overcome entry barriers of new markets, enabling SMEs to use their resources in an efficient way to become successful in the long run [66]. Digital strategies enable SMEs to grab and exploit valuable new opportunities in an uncertain atmosphere, resulting in superior growth [24]. The digital business strategy has become an essential factor of sustainable worth and competitive position [67]. Moreover, digital business strategies can also enable organizations to support more sustainable business models [68], which in turn promote social and economic development [69]. Additionally, digital business strategies can enhance the efficiency and effectiveness of business processes, leading to cost savings, improved customer experiences, and better risk management, all critical components of sustainable performance [28,70]. Li, Dai [39] concluded that cutting-edge technology facilitates organizations to enhance their sustainability performance by promoting sustainable behavior and reducing environmental effects. They also highlighted the need for a clear digital strategy to support sustainability goals.

Prior studies suggest that digital strategy and sustainable performance are closely related concepts [70,71]. Digital strategies can play an essential role in enhancing sustainability performance by enabling organizations to scan their ecological and social impacts more effectively, adopt sustainable business practices, and enhance the efficiency and effectiveness of business processes [26,72]. Therefore, digital strategy assists SMEs in encouraging SCP.

3.2. Mediating Role of Digital Capability

DeLone, Migliorati [73] define digital capability as “the ability to use technological programs to create value for customers, suppliers, and the firm itself”. These hands-on programs include software and hardware. According to Cenamor, Parida [74], digital capability refers “to the organization’s ability to use the latest advanced digital tools and technologies as competitive instruments”.

According to Mikalef and Pateli [75], using IT-based resources and technology, along with other resources both inside and outside of the company, is dependent on having a digital strategy. To better respond to the vigorous conditions, digital capability helps enterprises combine key information sources using digital technology [74].

Prior research indicates that digital capability plays an essential role in enabling firms to gain a competitive position by efficiently using technological resources [76]. Digital capability indirectly affects several variables. However, only limited studies, particularly in emerging economies, have suggested that this construct acts as an intervening mechanism from the perspective of SMEs.

Digital strategy has altered outmoded business practices into an innovative framework, which allows firms to develop digital initiatives for value creation [77]. Furthermore, digital strategy can play a significant role in enhancing sustainability performance by enabling organizations to efficiently adopt sustainable business practices and enhance the efficiency and effectiveness of business processes. However, achieving sustainable performance through digital strategy requires a clear understanding of capabilities. For example, digital processes have been found to support an innovative capability in order to increase SCP [78]. Moreover, we presume that the influence of digital strategy on SCP is facilitated by digital capability, as enterprises need suitable digital capability to industrialize their business operations and achieve a long-term sustainable position in the turbulent market [79].

Small businesses find it difficult to compete in turbulent conditions [80]. Several SMEs leverage their business strategies with digital capabilities in response to competitive pressure. From the perspective of developing economies such as Pakistan, SMEs have fewer resources than large companies, making it harder for them to accomplish their

strategic objectives and provide a worthwhile benefit [31]. Due to limited resources, SMEs use intangible skills and capabilities to gain competitiveness in the turbulent market [81] and improve their sustainable performance [70]. For instance, intangible capabilities (i.e., digital capabilities) enable enterprises to use the resources most efficiently and result in enhanced sustainable performance [82]. In emerging SMEs, digital capabilities are considered essential for superior sustainable profitability. Zhuge, Lin [83] concluded that SMEs use their digital capabilities and resources to promote sustainable development goals.

Prior studies have examined the nexus between digital capability and sustainable performance. Borah, Iqbal [84] argued that social media, along with innovative capabilities, significantly encourage SMEs' sustainable performance. In another similar study, Joensuu-Salo and Matalamäki [85] revealed that innovative tactics and digital capabilities assist SMEs to gain a competitive advantage, which in turn improves sustainable performance. In a similar vein, Li, Dai [39] demonstrated that digital technological capability could enable enterprises to improve their environmental and economic performance.

Digital capabilities are the most relevant factors to configure sustainable practices of SMEs [86]. Jiang, Yang [87] also favored this notion and discovered that in emerging SMEs, digitalization along with digital capability can sustain organizations for longer periods in the market. In addition, Borah, Iqbal [84] found that innovative capabilities significantly mediated the social media usage and sustainable performance of SMEs. Reflecting this interest, Anwar, Scheffler [32] found that innovation mediates the link between digitalization and the international performance of SMEs. They further suggested that digitalization strategies alone are not enough to increase performance. Mediation and other factors, such as skills, innovation, and capabilities, are needed to enhance performance. To support the above notion, Khin and Ho [38] and Wang, Gu [27] concluded that digital capabilities significantly improve operating performance. They further argued that technological capabilities facilitate firms to achieve good operating performance, such as minimizing costs and increasing consistency and resilience. As this direct influence of digital capability, we suppose a mediating role of digital capability on the nexus between a digital strategy and SCP.

3.3. Moderating Role of Digital Culture

Deuze [88] defined digital culture as "an emerging set of values, practices, and expectations regarding the way people (should) act and interact within a contemporary networked society". Digital culture signifies the openness and acceptance of digital-related knowledge [89]. Furthermore, Duerr, Holotiuk [90] described digital culture as "fostering innovation and the creation of new knowledge, thus supporting the creation of new goods and services". Digital culture, which is comparable to organizational culture, is one of the factors foiling the amendment needed to become more digital [91].

Researchers argued that digital strategy and digital capability influence the enterprise's success in only a slight way, and that substantial development requires the existence of firm-level variables (i.e., culture) [24]. Additionally, Martínez-Caro, Cegarra-Navarro [30] argued that digital culture is significantly related to digital technologies and capabilities. If enterprises have a more supportive digital culture, then they can easily exploit the technological capabilities, whereas if the digital culture is weak, then it is more likely that the digital technologies are not efficiently utilized. Consequently, the advantage derived from digitalization is likely to be inadequate.

Prior research demonstrated that digital culture strengthens the nexus between digital platforms and the supply chain capability [9]. In addition, Shin, Mollah [92] concluded that digital culture moderates the nexus between digital leadership and firm success. Martínez-Caro, Cegarra-Navarro [30] state that digital culture provides an environment that facilitates enterprises in business digitization and adapting digital technology. Additionally, Proksch, Rosin [24] found that digital culture significantly mediates the nexus between digital stagey and digitalization. However, the moderating role of digital culture on the nexus between

digital strategy and digital capability is still unknown. Therefore, we hypothesized that digital culture strengthens the digital strategy and digital capability nexus.

Figure 1 demonstrates a model where the role of digital strategy as an independent variable on SCP (dependent variable) through the mediating role of digital capability and the moderating role of digital culture is shown. Furthermore, the model also illustrates managerial (manager age, education, and experience) and firm-level (firm age, firm size) control variables. These managerial and firm-level variables are included in the research model to minimize the likelihood of spurious results.

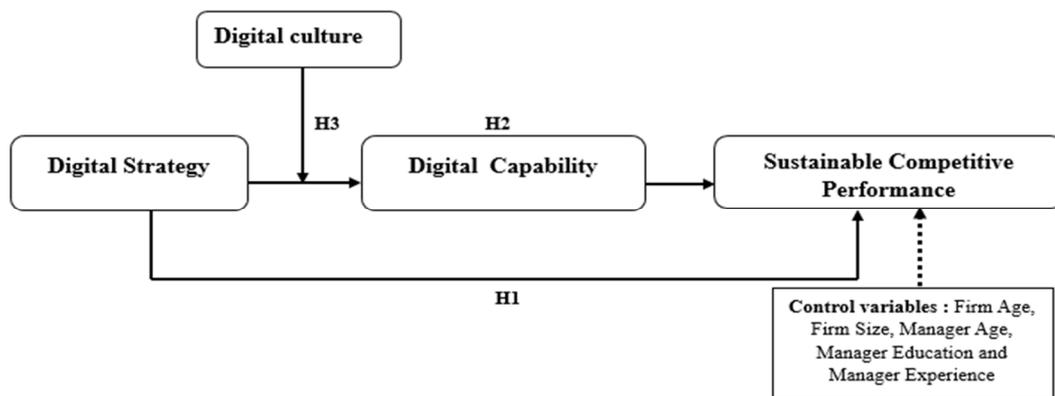


Figure 1. Research model.

4. Methodology

4.1. Sample and Data

This study aims to quantitatively scrutinize the nexus between digital strategy, digital capability, SCP, and digital culture. A quantitative-deductive and cross-sectional research design has been used to achieve the research objectives. Based on the prior literature, the following hypotheses were formulated in order to achieve the quantitative objectives:

H1. Digital strategy has a significant influence on the SCP of SMEs.

H2. The nexus between digital strategy and SCP is mediated by digital capability.

H3. Digital culture significantly strengthens the relationship between digital strategy and digital capability.

The target population is comprised of the manufacturing SMEs operating in the three big cities of Pakistan, namely, Rawalpindi (industrial city), Islamabad (capital city), and Lahore (trade city). These three big cities were chosen as a target population because most SMEs have headquarters there. The main reason for focusing only on manufacturing SMEs is that they are more actively involved in the process of digital transformation and sustainable practices [93,94].

A simple random sampling method was employed to choose the sample SMEs from the three lists obtained from the respective Chamber of Commerce of each city. In this study, we followed the SMEs definition provided by the “Small and Medium Enterprises Development Authority (SMEDA)”. SMEDA defines SMEs as “firms with more than 20 and less than 250 employees are considered SMEs in Pakistan”. According to SMEDA, SMEs contribute to the country exports, GDP, and employment in proportions of 25%, 40%, and 80%, respectively [31].

To gather data from the manufacturing SMEs, a self-administered survey approach was used for three main reasons. First, a self-administered questionnaire is more appropriate than email or online due to high response rates in emerging economies. Second, as compared to the US and Europe, in emerging economies, self-reported measures are more suitable to capture digitalization constructs related to SMEs [32]. Third, the survey

approach is more suitable for SMEs that do not maintain a record of annual financial statements [95]. To capture the response of each SME, we shared a hard copy of questionnaires in the English language with owners or managers of the respective SMEs because they are strategic decision-makers and have appropriate knowledge about business operations. The questionnaire had two parts (A and B). In part A, the respondents were asked about the demographic variables, and in part B, about the main constructs (digital strategy, digital capability, digital culture, and SCP).

The empirical survey was completed in almost three months (i.e., from 5 June 2023 and ending in August 2023). A total of 600 questionnaires were distributed among owners and managers. In total, 376 complete and accurately filled responses were considered for analysis, with a response rate of 62%. Prior studies in emerging markets recommend that a sample of 300 and above is considered appropriate in the SMEs context [43,95]. Additionally, Osborne, Costello [96] described criteria for the sample selection on the basis of a ratio of participants to the number of items used in the study (i.e., 15 participants for 1 item). According to this criterion, 345 (15×23 items) is suitable as a sample size. The respondents and firms detail are given in Table 1.

Table 1. Profiles of the participating firms and respondents.

| Description | Frequency | Percent |
|----------------------------|-----------|---------|
| Firm Age (Years) | | |
| 10 and less | 141 | 37.5 |
| 11–20 | 132 | 35.1 |
| 21 and above | 103 | 27.4 |
| Firm Size (Employees) | | |
| 20–50 | 90 | 23.9 |
| 51–100 | 71 | 18.9 |
| 101–150 | 68 | 18.1 |
| 151–200 | 75 | 19.9 |
| 201–250 | 72 | 19.1 |
| Respondent Education | | |
| Intermediate and less | 69 | 18.4 |
| Bachelor | 123 | 32.7 |
| Master | 127 | 33.8 |
| MS/MPhil | 51 | 13.6 |
| PhD | 6 | 1.6 |
| Manager Experience (Years) | | |
| Less than 5 | 1 | 0.3 |
| 5–9 | 29 | 7.7 |
| 10–15 | 165 | 43.5 |
| 15–20 | 181 | 48.1 |
| Manager Age (Years) | | |
| 18–25 | 4 | 1.1 |
| 26–35 | 72 | 19.1 |
| 36–45 | 220 | 58.5 |
| 45–55 | 80 | 21.3 |
| Total | 376 | 100 |

4.2. Measurement of Variables

To measure the variables, five-point Likert scales were used, representing “extremely declined = 1”, to “extremely improved = 5”. All the items are presented in Appendix A.

Digital strategy: Digital strategy is a business strategy that facilitates organizational digital activities and processes according to the dynamic business environment to achieve superior performance in the long run [25]. We measured the digital strategy by using five items taken from prior literature [24]. A sample item is: “digitalization is among the top three most important elements of our business strategy”.

Digital capability: The ability to use technological tools and programs as competitive instruments and create value for stakeholders and the firm. To measure digital capability,

this study adapted five items from prior studies [38,97], whereby the top management teams of the firms were asked to indicate the level of their company's capabilities in certain areas, for instance, "using digital technologies in developing our new solutions".

Digital culture: To measure digital culture, we adopted five items from previous studies [24,90]. To gauge digital culture, respondents were asked to assess how often they experience a range of cultural influences. A sample item is: "we openly discuss failures with all team members".

Sustainable competitive performance: To gauge the SCP, eight items were used, adopted from the study of Ying, Hassan [98]. To measure the SCP of the firms, managers were asked to rate their firm's performance on the basis of return on equity and return on assets, etc., in the last three years.

All the constructs were adopted from previous studies and were already tested and validated by the researchers.

4.3. Control Variables

Control variables, such as firm-specific (age and size) and manager-specific variables (age, education, and experience), were included in the structural regression model to reduce the chances of spurious results in the sampled data [32]. Based on the outcomes of the structural model, we found that factors such as manager age, education experience, and firm age had a significant influence on SCP.

5. Data Analyses and Results

The data were analyzed through SPSS and AMOS, and the PROCESS approach was also applied as a robustness test. To obtain the predictive relevancy and valid results, we executed separate structural models for the direct impact, mediation, and moderation factors. However, we first assessed the common method bias to see if there was social desirability bias in the sample.

5.1. Common Method Bias (CMB)

The data were cross-sectional in nature, due to which the threat of CMB may persist. CMB issues arise when the link between endogenous and exogenous constructs is inflated. To address the problem of CMB, we executed "Harman's Single-Factor Test" in SPSS 25. The outcomes of Harman's test indicated that there was no CMB issue because the variation percentage was only 48.07%, which is below the threshold level of 50%, verifying that the data were free of CMB issues, as suggested in [99].

5.2. Descriptive Statistics

The descriptive statistical scores of the constructs are displayed in Table 2. The results in the descriptive table show the mean score and standard deviation of all the constructs. Table 2 displays the mean score of constructs ranging from 3.6617 to a maximum of 3.8221. Furthermore, the standard deviation varied from minimum = 0.41189 to maximum = 0.46193. Additionally, the data fulfilled the normality assumption because the constructs had desirable scores (± 2) for both Skewness and Kurtosis, as advised in [100].

Table 2. Descriptive statistics.

| Variables | Mean | SD | Skewness | Kurtosis |
|--------------------|--------|---------|----------|----------|
| Digital strategy | 3.7128 | 0.46193 | −0.403 | 0.640 |
| Digital capability | 3.7000 | 0.42508 | −0.476 | 1.612 |
| Digital culture | 3.6617 | 0.44160 | −0.032 | 0.186 |
| SCP | 3.8221 | 0.41189 | −0.444 | 1.945 |

Note: SCP = sustainable competitive performance, SD = standard deviation.

5.3. Correlation

To test the association between the main constructs, Pearson correlation was performed in SPSS (see Table 3). The coefficient score of correlation among the variables (see Table 3) indicated that digital strategy ($r = 0.368^{**}$) and digital capability ($r = 0.321^{**}$) were significantly associated with firm SCP. Moreover, digital strategy was also significantly associated with digital capability ($r = 0.157^{**}$). Furthermore, digital culture was significantly related to firm SCP ($r = 0.473^{**}$) and digital capability ($r = 0.236^{**}$). All the variables' correlation coefficient values were under 0.80, which substantiates that there was no issue of multicollinearity.

Table 3. Correlation analysis.

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|------------------------------------|----------|--------|----------|----------|----------|----------|----------|----------|-------|
| 1. Firm Age | 1 | | | | | | | | |
| 2. Firm Size | 0.071 | 1 | | | | | | | |
| 3. Manager Education | 0.164 ** | 0.010 | 1 | | | | | | |
| 4. Manager Age | 0.065 | 0.071 | 0.273 ** | 1 | | | | | |
| 5. Manager Experience | 0.130 * | 0.076 | 0.285 ** | 0.420 ** | 1 | | | | |
| 6. Digital strategy | 0.185 ** | 0.029 | 0.100 | 0.011 | 0.105 ** | 1 | | | |
| 7. Digital capability | 0.139 ** | 0.008 | 0.183 ** | 0.082 | 0.128 * | 0.157 ** | 1 | | |
| 8. Digital culture | −0.0120 | −0.030 | 0.073 | 0.071 | 0.057 | 0.641 * | 0.236 ** | 1 | |
| 9. SCP | 0.447 ** | 0.075 | 0.387 ** | 0.320 | 0.412 ** | 0.368 ** | 0.321 ** | 0.473 ** | 1 |
| VIF (Dependent—SCP) | 1.083 | 1.015 | 1.169 | 1.259 | 1.299 | 1.637 | 1.733 | 1.293 | - |
| VIF (Dependent—Digital capability) | 1.082 | 1.014 | 1.167 | 1.257 | 1.295 | 1.869 | 1.802 | - | - |
| Cronbach's alpha | - | - | - | - | - | 0.909 | 0.859 | 0.879 | 0.945 |

Note: ** Correlation is significant at the 0.01 level (2-tailed), * correlation is significant at the 0.05 level (2-tailed). SCP = sustainable competitive performance.

5.4. Measurement Model

To gauge the factor loading of items and the validity and reliability of the constructs, we performed confirmatory factor analysis (CFA). In the measurement model, we included all the observed variables and loaded their potential unobserved variables. First, we ensured that all the items displayed satisfactory loadings on their respective constructs and met the threshold criteria (i.e., greater than 0.70, $p < 0.001$), as suggested in [101] (see Table 4). For model fitness, we used different criteria, such as CMIN = 2.318 (less than 3), GFI = 0.896, AGFI = 0.868, TLI = 0.946, CFI = 0.953, and NFI = 0.921 (greater than 0.80), as per the recommendations in [102]. Furthermore, the values RMR = 0.014 and RMSEA = 0.059 also fell in the acceptable range (lower than 0.09), as suggested by Bollen and Stine [103]. All the constructs had acceptable values for both convergent validity ($AVE > 0.50$) and discriminate validity ($\sqrt{AVE} > 0.07$; see Table 3), as advised by Garver and Mentzer [104]. To assess the internal consistency of the construct, the composite reliability score was calculated. The composite reliability scores for all the constructs were in the acceptable range (greater than 0.70), as recommended in [105].

Table 4. Factor loading, validity, and composite reliability.

| Items and Variables | Estimate | <i>p</i> -Value | AVE | $\sqrt{\text{AVE}}$ | C.R. |
|---------------------|----------|-----------------|------|---------------------|------|
| Digital strategy | | | 0.81 | 0.90 | 0.90 |
| ds5 | 0.801 | *** | | | |
| ds4 | 0.777 | *** | | | |
| ds3 | 0.722 | *** | | | |
| ds2 | 0.977 | *** | | | |
| ds1 | 0.794 | *** | | | |
| Digital capability | | | 0.74 | 0.86 | 0.85 |
| dc5 | 0.773 | *** | | | |
| dc4 | 0.760 | *** | | | |
| dc3 | 0.685 | *** | | | |
| dc2 | 0.790 | *** | | | |
| dc1 | 0.696 | *** | | | |
| SCP | | | 0.81 | 0.90 | 0.94 |
| scp8 | 0.911 | *** | | | |
| scp7 | 0.751 | *** | | | |
| scp6 | 0.724 | *** | | | |
| scp5 | 0.929 | *** | | | |
| scp4 | 0.720 | *** | | | |
| scp3 | 0.929 | *** | | | |
| scp2 | 0.760 | *** | | | |
| scp1 | 0.782 | *** | | | |
| Digital culture | | | 0.75 | 0.86 | 0.86 |
| dcul5 | 0.931 | *** | | | |
| dcul4 | 0.803 | *** | | | |
| dcul3 | 0.741 | *** | | | |
| dcul2 | 0.593 | *** | | | |
| dcul1 | 0.688 | *** | | | |

Note: AVE = average variance extracted, C.R. = composite reliability. *** Significant ($p < 0.001$).

5.5. Structural Model Results

The first model (see Figure 2) was assessed in AMOS to scrutinize the influence of digital strategy on firm SCP. The results (see Table 5) substantiate H1, as they show that digital strategy had a significant influence on firm SCP ($\beta = 0.244, p < 0.05$). However, to assess the mediating role of digital capability between digital strategy and firm SCP, we ran a second structural model (see Figure 3). The results (see Table 6) indicate that the direct path of digital strategy on firm SCP ($\beta = 0.253, p < 0.05$) was significant, and the indirect effect of digital strategy on firm SCP ($\beta = 0.033, p < 0.05$) also remained significant in the presence of digital capability. This result (see Table 6) indicates that digital capability plays a partial mediating role between the nexus of digital strategy and firm SCP. These results partially support H2. The R^2 value indicates that 40% variance was elucidated in firm SCP by digital strategy in the presence of digital capability along with the control variables.

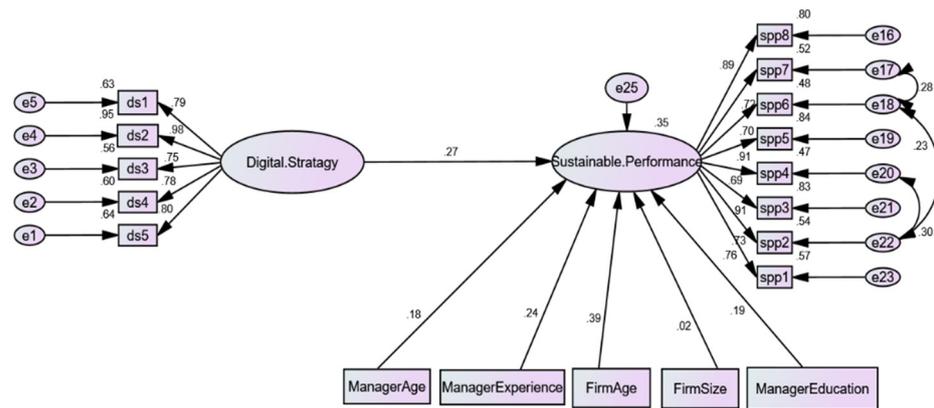


Figure 2. Structural model 1.

Table 5. Hypothesis testing (direct).

| Hypothesis | B | p-Value |
|--------------------------|-------|---------|
| Control Variables | | |
| SCP ← Firm age | 0.190 | 0.000 |
| SCP ← Firm size | 0.005 | 0.686 |
| SCP ← Manager education | 0.075 | 0.000 |
| SCP ← Manager age | 0.104 | 0.000 |
| SCP ← Manager experience | 0.148 | 0.000 |
| Main Variable | | |
| SCP ← Digital strategy | 0.244 | 0.000 |

Note: SCP = sustainable competitive performance.

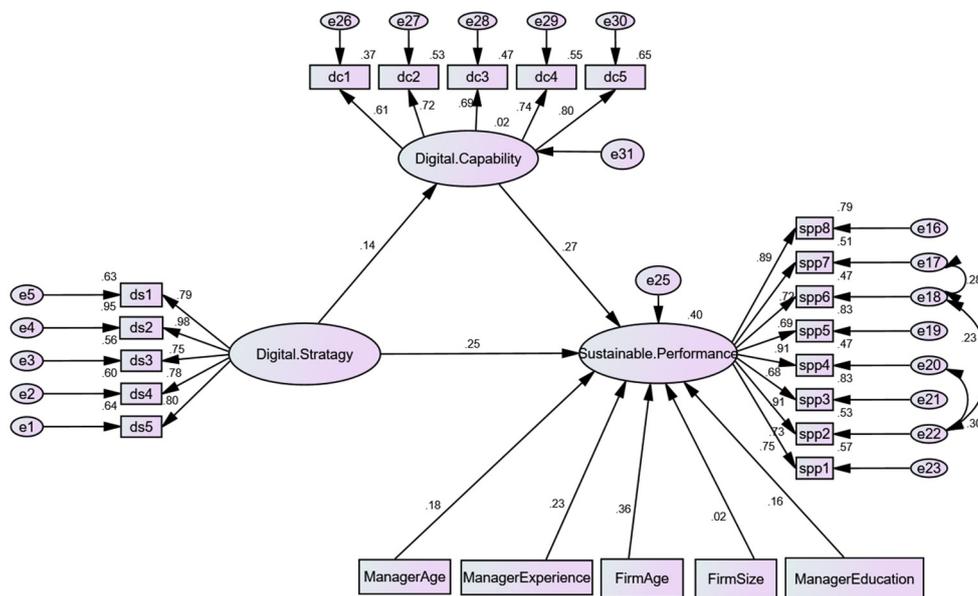


Figure 3. Structural model 2.

Table 6. Hypotheses testing (mediation).

| Hypotheses | Direct Effect | | Indirect Effect | |
|--|---------------|-------|-----------------|-------|
| | β | p | β | p |
| Control Variables | | | | |
| SCP \leftarrow Firm age | 0.366 | 0.001 | - | - |
| SCP \leftarrow Firm size | 0.021 | 0.691 | - | - |
| SCP \leftarrow Manager education | 0.161 | 0.001 | - | - |
| SCP \leftarrow Manager age | 0.175 | 0.001 | - | - |
| SCP \leftarrow Manager experience | 0.233 | 0.001 | - | - |
| Main Variables | | | | |
| SCP \leftarrow Digital strategy (via digital capability) | 0.253 | 0.001 | 0.033 | 0.046 |
| Digital capability \leftarrow Digital strategy | 0.132 | 0.059 | - | - |
| SCP \leftarrow Digital capability | 0.249 | 0.001 | - | - |

Note: SCP = sustainable competitive performance.

5.6. Moderation Analysis

To scrutinize the moderation effect, moderating analyses were performed in AMOS 21 (see Figure 4). An interaction term (DS \times DCU) was created to capture the moderating effect of digital culture on the relationship between digital strategy and digital capability. The results of the interaction term of digital strategy and digital culture (see Table 7) indicate that digital culture significantly strengthened the nexus between digital strategy and digital capability ($\beta = 0.102, p < 0.05$), which substantiates H3.

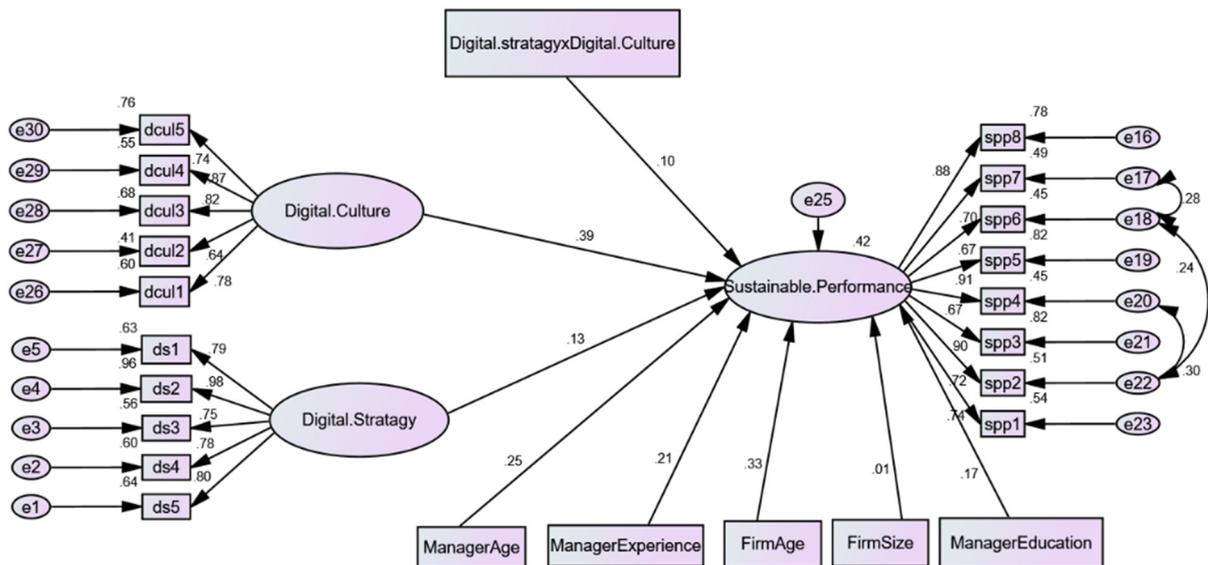


Figure 4. Structural model (moderation).

5.7. Robustness Test

For robustness testing, the mediation analysis was performed via the PROCESS method in IBM-SPSS version 25 to enhance the soundness of the outcomes and implications. The PROCESS method confirmed the outcomes of SEM and that digital capability partially mediated the nexus between digital strategy and SCP.

For the effect of digital strategy on SCP:

- “Total effect of DS (X) on SCP (Y)”
 $b = 0.2484, t = 6.6920, p < 0.001$
- “Direct effect of DS (X) on SCP (Y)”
 $b = 0.2292, t = 6.2764, p < 0.001$
- “Indirect effect of DS(X) on SCP (Y) through DC(M)”

$b = 0.0192, p < 0.001, \text{Boot-LL-CI} = 0.0005, \text{Boot-LL-CI} = 0.0443$

Note: SCP = sustainable competitive performance, DS = digital strategy, and DC = digital capability.

Table 7. Hypotheses testing (moderation).

| Hypothesis | | β | p |
|--------------------|--------------------------------------|---------|-------|
| Control Variables | | | |
| Digital capability | ← Firm age | 0.330 | 0.000 |
| Digital capability | ← Firm size | 0.015 | 0.726 |
| Digital capability | ← Manager education | 0.169 | 0.000 |
| Digital capability | ← Manger age | 0.245 | 0.000 |
| Digital capability | ← Manager experience | 0.215 | 0.000 |
| Main Variables | | | |
| Digital capability | ← Digital strategy | 0.133 | 0.002 |
| Digital capability | ← Digital culture | 0.388 | 0.000 |
| Digital capability | ← Digital strategy × Digital culture | 0.102 | 0.014 |

6. Discussion and Conclusions

Enterprises across the globe have been striving for sustainable outcomes for the last several years [26,84,106], and it has become increasingly difficult for them to enhance their sustainable performance in today's digital era. In today's competitive digital environment, it is quite challenging for enterprises and industries to manage business operations through a traditional approach. SMEs, especially, are unable to compete in the market due to limited resources and a lack of innovative tactics. Digitization strategies have become one of the key factors nowadays due to the fourth industrial revolution. Hence, on such occasions, SMEs need new strategies and capabilities that can overcome the challenges they face and achieve sustainable outcomes [107,108]. Hence, digital capabilities and strategies may be the best choice at this juncture for gaining SCP in the modern era. The previous discussion on the role of digital strategy and digital capability in SCP of SMEs is in its initial phases and, particularly, little is known about the role of digital strategy and digital capability in the SCP of manufacturing SMEs in Pakistan.

In particular, prior researchers have drawn varying inferences about the nexus between digital strategy and sustainable performance. On the one hand, researchers have recognized that digital strategy facilitates enterprises' productivity (Wang et al., 2020) [29] and operational performance [109], which in turn improves sustainability [110]. On the other hand, some researchers have concluded that digital technology has no significant influence on firm performance [63], and negative influences on environmentally sustainable performance [70]. This study scrutinized the nexus between digital strategy and SCP of SMEs with the interceding role of digital capability and the moderating role of digital culture, which have not been fully examined. A recent study by Ahmad, Wu [46] suggested that future researchers should explore the nexus between digital strategy and SCP and assess the nexus through a mediator and a moderator. This research provides empirical evidence for the nexus between the digital strategy and SCP with the mediating role of digital capability and moderating role of digital culture in the context of emerging SMEs operating in Pakistan, responding to the call of Ahmad, Wu [46].

The notion for this study was established from the current literature and was verified through the quantitative procedure using AMOS 25. Based on the empirical evidence of emerging SMEs, the outcomes revealed that digital strategy had a significant positive effect on SCP. This assertion is congruent with the outcomes of Ukko, Nasiri [26] and Wang, Feng [60], who stated that digital strategies lead to superior performance. These findings are also congruent with those of Tsou and Chen [63], who indicated that digital strategy has a significant influence on firm performance. The findings indicate that digital strategy leads to superior SCP of SMEs. These findings are similar to those of Bouwman et al. (2019) [21], who gathered empirical data from 321 European SMEs, and concluded that

effective execution of digitalization strategies leads to superior performance in the long run. These results are also similar to those of Huong and Thanh [72], who found that digitalization strategies significantly enhanced the sustainable environmental performance of European countries.

Moreover, this study substantiated the mediating role of digital capability in the nexus between digital strategy and SCP of SMEs. The results showed that digital capability plays a partial mediating role in the digital strategy and SCP relationship. The results demonstrated that the effectiveness of digital strategy should be realized through the backing of digital capability. These findings are partially similar to those of Heredia, Castillo-Vergara [45], who described that digital capabilities indirectly contribute to firm performance through digital technologies in the European context. These results align partially with Chi, Lu [28], who stated that e-collaboration capability fully mediates the nexus between digital business strategy and firm success. Our results endorse those of the authors of [70], who scrutinized how digital strategy has no direct impact on sustainable environmental performance, although an indirect significant impact was seen through digitalization. Similarly, Wang, Gu [27] demonstrated that digital capability can assist enterprises in responding to internal and external environmental fluxes and provide advanced innovative solutions according to demand and trends. Our results also partially support those of Kastelli, Dimas [111], who stated that the indirect influence of digital capability on innovative outcomes through absorptive capability is stronger. They argued that digitalization strategies only improve innovative outcomes when firms possess absorptive capability, in the context of Greek manufacturing firms. Similarly, our results favored those in [112], revealing how Spanish enterprises use digital skills to alleviate the hurdles for their business operation in the long run. These outcomes revealed that while making strategic choices on achieving SCP, the owner and manager must consider digital strategy and digital capability.

Finally, our results indicated that digital culture appears as a significant moderator between the nexus of digital strategy and digital capability. These outcomes are in line with the outcomes in [24], where a sample of 102 new German ventures was employed and it was contended that digital culture significantly enhances the impact of a digital strategy on the digitalization of new ventures, to automate their business operations and assist them to improve overall productivity in the long run [113,114]. They argued that digital culture provides room for innovativeness and supports ventures in the process of digitalization. These results are also congruent with the findings of Martínez-Caro, Cegarra-Navarro [30], who found that that digital culture provides an environment that facilitates enterprises in business digitization and adapting digital technology. The finding regarding the moderating effect of digital culture in this study implies that enterprises devoted to implementing digital technologies and improving their digital ability to better manage said technology are more likely to establish a digital culture that, in turn, improves their SCP. A clear digital strategy, along with a supportive digital culture, is poised to drive the transformation. The results indicate that, particularly in the era of digitalization, manufacturing SMEs should not only rely on digital strategy but also require digital culture to efficiently use digital resources, thereby realizing sustainable outcomes. In other words, digital strategy and digital culture play a more crucial role in the digital capability, which in turn improves SCP.

The contributions of this research are twofold, the first of which enriches the existing literature on the relationship between digitalization and SCP in SMEs, while the second contribution concerns the DC theory. Despite the considerable increase in the role of digitalization in firm performance, SMEs in emerging economies have rarely been addressed, e.g., [32]. In particular, the literature has missed how digital capability mediates the path between digital strategy and SCP in the presence of digital culture in SMEs. Hence, we tackled the opportunity and enriched the literature through empirical evidence of SMEs. We found that digital strategy was a significant predictor of SCP, whereas the relationship was partially mediated by digital capability and significantly moderated by digital culture. Our contribution in this paper has been to chart a new avenue for the DC theory [33–35],

particularly in the relationship between digital strategy and SCP mediated by digital capability and digital culture. Although previous studies have enriched the literature on DC theory in SMEs in the field of digitalization, e.g., [56,115,116], as mentioned, these previous studies have some limitations; for example, focusing on developed markets, large firms, and specified digital strategies. The present research was developed to assess the relationship between digital strategy, digital capability, digital culture, and SCP in SMEs to advance our understanding of the DC theory. In particular, we focused on emerging SMEs and found that digital strategy is a significant predictor of digital capability that in turn leads to SCP. However, SMEs must promote digital culture to reinforce the role of digital strategy in digital capability.

Considering the findings for practical implications, this research has several recommendations for small businesses and the government. We found a significant association between digitalization (digital strategy, digital capability, and digital culture) and SCP in SMEs. Our research highlights digital strategy as a significant factor in digital capability and SCP. Top managers of small businesses should adopt a digital strategy to configure their digital capability, thus resulting in SCP. Small businesses need to understand the importance of digital strategy in performance implications. We also found that digital culture plays a key role in increasing digital capability. Hence, SMEs should promote digital culture and appreciate their employees who have digital knowledge, digital experience, and digital interests in the workforce. Doing so will improve the digital capability, leading to SCP. In Pakistan, the environment is deemed highly volatile, and firms with advanced technologies and digital tactics are assumed to outperform other firms. Hence, SMEs need to remain in the race and focus on the digital determinants to achieve a desirable performance. SMEs should take different routes of digitalization to improve their SCP. Overall, our research shows that firms must promote a digital environment and digital tactics to configure their performance and position in the competitive environment.

This study also offers numerous implications for policymakers, government bodies, and SMEDA. We hypothesized that digital strategy and digital capability play a prominent role in the SCP of SMEs operating in the emerging market in Pakistan. Our findings suggest that government officials should promote the effective execution of digitalization strategies among SMEs, as this can assist them in achieving SCP in the long run. The study insights also show that digital culture plays a moderating role between digital strategy and digital capability. Therefore, SMEDA is advised to arrange training and awareness programs about the adoption of digitalization and digital culture within small business industries. Furthermore, SMEDA and government officials should provide technological support to SMEs while digitizing their business operations.

Research on the relationship between digitalization and firm performance has grown exponentially over the past decade. However, it is evident that most of the studies have been conducted on European markets and large firms, while scrutinizing the role of digitalization in the sustainable competitive performance of emerging SMEs remains largely uncharted territory. Specifically, the mechanisms through which digital strategy enhances digital capability and, in turn, leads to sustainable competitive performance in manufacturing SMEs have received limited attention. To bridge this gap and contribute to the literature, we quantitatively assessed the nexus between digital strategy and SCP of manufacturing SMEs, with the intervening role of digital capability and the moderating role of digital culture. To accomplish this objective, data were gathered from 376 manufacturing SMEs through a survey approach and analyzed through SPSS 25 and AMOS 25. Additionally, the SEM technique was applied to substantiate the hypotheses of the quantitative study. The SEM results confirmed that digital strategy enhanced the SCP of manufacturing SMEs. The outcomes of the study also showed that digital capability partially mediated these nexuses. These results showed that while deciding how to achieve SCP, the owners and managers should consider digital strategy and digital capability. Furthermore, the outcomes revealed that digital culture significantly strengthened the nexus between digital strategy and digital capability. These outcomes indicate that firms with a strong digital culture

can easily formulate digital capability through digital strategy. This research revealed that SMEs in Pakistan cannot gain digital capability without a strong digital culture and strategy. There are a few limitations that could be addressed in future studies. The first limitation of this research is aligned with the cross-sectional data, which could lead to social desirability bias. Although we took care of the bias during survey building and data collection, to eliminate the bias, future scholars should use a mixed-methods approach and longitudinal or in-depth interviews. Second, our research relied on SMEs in Pakistan. We encourage researchers to survey large firms to extract how digitalization affects the SCP of companies. Moreover, despite having a good geographic network, Pakistan is not the best representative of other emerging economies. Therefore, we invite scholars from other neighboring countries to extend the model and validate the results in different cultures. A comparative study between or among India, China, Pakistan, Iran, and Russia would yield comprehensive insights from this perspective. The model can further be extended to Europe to see how digitalization affects SCP in SMEs. Third, we tested digital capability as a mediator and digital culture as a moderator between digital strategy and SCP. Other determinants, for example, digital networks, digital platforms, and digital business models, could be considered to enhance the practical implications of the model.

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Appendix A

Table A1. Questionnaire.

| Digital Strategy | |
|--------------------|--|
| DS1 | Digitalization is among the top-three most important elements of our business strategy. |
| DS2 | We investigate the newest trends and future scenarios in digitalization to stay competitive. |
| DS3 | Digital projects have a high priority within our business. |
| DS4 | We constantly update and refine our digital strategy. |
| DS5 | Our competition as well as industry experts perceive us as a leader in digital innovation. |
| Digital Capability | |
| DC1 | Acquiring important digital technologies. |
| DC2 | Identifying new digital opportunities |
| DC3 | Responding to digital transformation. |
| DC4 | Mastering the state-of-the-art digital technologies. |
| DC5 | Developing innovative products/services/processes using digital technology. |
| Digital Culture | |
| DC1 | We openly discuss failures with all team members. |
| DC2 | Decisions are based on the opinion of the whole team, not on a single person only. |
| DC3 | We work in cross-functional teams (combining people from IT, marketing, and finance). |

Table A1. Cont.

| | |
|--|--|
| DC4 | In our company, we avoid strong hierarchies in project work. |
| DC5 | Every team member brings in ideas and suggestions for digital products and services. |
| Sustainable Competitive Performance | |
| SCP1 | Return on investment (ROI). |
| SCP2 | Profits as a percentage of sales. |
| SCP3 | Decreasing product or service delivery cycle times. |
| SCP4 | Rapid response to market demand. |
| SCP5 | Rapid confirmation of customer orders. |
| SCP6 | Increasing customer satisfaction. |
| SCP7 | Increasing profit growth rates and growing market shares. |
| SCP8 | Reducing operating costs. |

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