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The Impact of Digital Transformation on Organizational Resilience in Nepalese SMEs: The Mediating Role of Entrepreneurial Orientation

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Abstract

Background: Nepal's economy depends heavily on small and medium enterprises (SMEs), although they confront obstacles like scare resources and external disruptions. Digital Transformation (DT) has emerged as a key strategy to enhance organizational resilience (OR), enabling the enterprises to adapt and recover from such challenges. However, the adoption of digital technology in Nepalese SMEs remains low and the relationship between DT, OR and EO (Entrepreneurial orientation) is underexplored.

Objectives: This study investigates the impact of DT on OR in Nepalese SMEs, focusing on the mediating role of EO, to provide insights for building resilience and ensuring long-term sustainability in a dynamic business environment of Nepal.

Methods: This study employs a quantitative research approach using a cross-sectional survey design. A non-probability convenience sampling method was used. Data were collected from 303 SME owners, managers, and employees of Kathmandu Valley. The variable responses were analyzed using descriptive statistics, Partial Least Squares Structural Equation Modeling (PLS-SEM) including bootstrapping, reliability and validity tests. The data were analyzed using R 4.4.1 version.

Results: The study found that DT significantly improves OR in Nepalese SMEs by helping them adapt to challenges. While EO did not show a direct significant impact on OR, suggesting that proactiveness, innovativeness and risk-taking alone may not directly enhance OR, EO partially mediated the DT-OR relationship.

Conclusion: DT enhances OR among Nepalese SMEs, by helping them to adapt to disruptions for sustainable growth. SMEs using digital technologies better handle market uncertainties. Although, EO alone does not directly impact OR, it partially mediates the DT-OR relationship, meaning a strong entrepreneurial mindset helps SMEs fully leverage DT benefits. This highlights the importance of combining digital adoption with entrepreneurial culture to boost resilience and competitiveness.

Keywords: Business sustainability, digital transformation, entrepreneurial orientation, organizational resilience, SMEs

JEL Classification: L26, O33, M10

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Introduction

Small and Medium Enterprises (SMEs) play a pivotal role in economic growth and employment generation particularly in developing countries like Nepal. Despite their significance, SMEs remain under-researched, especially in the context of developing economies (Paudel, 2020). In Nepal, SMEs constitute approximately 90 percent of total enterprises, contributing significantly to national GDP and providing employment to nearly 2.6 million people (Sharma & Poudel, 2025). Further, SMEs account for around 95-98 percent of total enterprise establishments, contributing 83 percent to employment creation (Acharya & Pandey, 2018). However, despite their crucial role, Nepalese SMEs have struggled to achieve sustainable growth and expansion. Various institutional efforts to promote SME development have not yielded expected results, with stagnation in manufacturing and trading sectors and a high rate of SME failures (Ghimire, 2011; MoF, 2017). One of the primary reasons for this underperformance is the lack of strategic analysis and timely adaptation to changing market dynamics. In this evolving business landscape, digital transformation (DT) has emerged as a critical factor in ensuring organizational resilience (OR), enabling businesses to sustain operations and adapt to market disruptions effectively.

External disturbances such as natural disasters, technological disruption, political instability, economic changes and global crises including the recent COVID-19 pandemic pose significant threats to SME survival (Albaz et al., 2020). These disruptions are often unpredictable, making resilience a crucial determinant of business sustainability (Penadés et al., 2017). SMEs, due to their labor-intensive nature and high dependence on consumer perception, are particularly vulnerable to such crises. Organizational resilience is thus increasingly recognized as a strategic necessity for SMEs to survive and thrive in uncertain environments (Liu et al., 2021). While the COVID-19 pandemic highlighted the disruptive impact of external shocks, other factors such as rapid technological advancements, economic fluctuations, and political instability continue to challenge SME sustainability (Lopez-Torres et al., 2024).

Digital transformation has been identified as a fundamental enabler of organizational resilience in present context He et al. (2023). Businesses that effectively integrate digital technologies such as artificial intelligence, big data, cloud computing, digital payment system, social media reach, and IoT demonstrate higher adaptability to market shifts and crises (Nawaz & Koç, 2019). Organizations that successfully embrace digitalization can improve operational efficiency, enhance customer engagement and drive innovation, ultimately strengthening their resilience (Velu et al., 2019). The integration of digital technologies not only transforms traditional business models but also reshapes organizational strategies, structures, and cultures (Vial, 2021). However, the impact of digital transformation on organizational resilience is context-specific and requires a balanced approach to maximize benefits while mitigating associated risks (Wirtz et al., 2022).

In the Nepalese context, while SMEs are vital to economic growth, but they face challenges in adopting digital transformation due to limited resources, lack of technological expertise, and resistance to change. Consequently, the relationship between digital transformation and organizational resilience in Nepalese SMEs remains underexplored. Entrepreneurial orientation (EO), which encompasses proactiveness, innovativeness, and risk-taking, plays a crucial role in how firms respond to digitally driven changes. Rather than being a precursor to digital adoption, EO is seen as a behavioral outcome shaped by the digital transformation process, which creates a fertile ground for entrepreneurial trait to emerge and strengthen. Research suggests that EO fosters adaptability and resilience, helping firms leverage digital technologies for competitive advantage (Hughes et al., 2018; Wiklund & Shepherd, 2005). But in digitally transforming or transformed firms, entrepreneurial orientation proactively seeks innovations, adjusts to shifting market conditions, and enhances resilience in the face of uncertainty (Lumpkin & Dess, 1996; Lengnick-Hall et al., 2011). Despite these insights, the specific role of EO as a mediating factor in the relationship between digital transformation and organizational resilience remains unclear.

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This study aims to address this gap by examining the impact of digital transformation on organizational resilience among Nepalese SMEs and assessing the mediating role of entrepreneurial orientation in this relationship. By exploring these dynamics, this research seeks to provide valuable insights for SME owners, managers, and policymakers, aiding in the formulation of strategic frameworks for fostering resilience and competitiveness in a rapidly evolving digital landscape. The findings of this study will contribute to the theoretical understanding of digital transformation, organizational resilience, and entrepreneurial orientation while offering practical recommendations for enhancing SME sustainability in Nepal and other developing economies.

Review of Literature

Thematic Review

Digital transformation (DT) is the use of digital technologies to change how businesses operate and compete (Vial, 2021). By adopting tools like AI, computing, big Data, IoT, social media, digital payment system organizations can improve efficiency and customer experience (Resnick, 2002; Hanna, 2016). In Nepal, DT helps business stay resilient, but SMEs face challenges such as limited resources and infrastructure (Omrani et al., 2024; Adhikari & Molla, 2024). Still, DT is seen as a key for adapting to change and staying competitive (Zhang et al., 2021).

Organizational resilience (OR) is an organization's ability to adapt and recover from disruptions while continuing the operations (Lengnick-Hall et al., 2011). It involves turning challenges into opportunities for growth (Sutcliffe & Vogus, 2003), which is vital for SMEs facing frequent external disruptions (Liu et al., 2021).

Digital Transformation enhances organizational resilience by enabling SMEs to adapt to disruption through technological integration, as evidenced by the studies done by, (He et al. 2023) and (Zhang et al., 2021).

H1: *Digital transformation has a significant positive impact on organizational resilience in Nepalese SMEs.*

Entrepreneurial orientation (EO) involves innovativeness, proactiveness and risk-taking (Miller, 1983). It helps firms adapt to market changes and gain competitive advantages (Lumpkin & Dess, 1996). EO mindset is crucial for adopting to market changes and take necessary action for enhancing resilience during and after digital transformation (Covin & Miller, 2014) and firms with strong EO are better equipped to navigate uncertainties (Xia et al.,2024). However, its role in linking digital transformation to resilience in Nepalese SMEs needs more study.

H2: *Digital transformation has a significant positive impact on entrepreneurial orientation in Nepalese SMEs.*

Theoretical Review

The study is grounded in the Dynamic Capabilities Theory (DC), which emphasizes the ability of firms to integrate, build, and reconfigure internal and external resources to adapt to rapidly changing environments (Teece, 2016). DC theory posits that firms with strong dynamic capabilities can achieve sustainable competitive advantage by sensing opportunities, seizing them through resource mobilization, and transforming their operations to align with market demands (Teece, 2016). In the context of DT, dynamic capabilities enable firms to leverage digital technologies for innovation and resilience (Hernández-Linares et al., 2018). Similarly, DT helps in enhancing dynamic capabilities by fostering a culture of innovation, proactiveness, and risk-taking, which are critical for navigating changes and building resilience Abu-Rumman et al., (2021).

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Empirical Review

Empirical studies highlight the positive impact of DT on OR, particularly during crises such as the COVID-19 pandemic. For instance, He et al. (2023) found that DT enhances organizational resilience by improving digital intensity and transformation management intensity. Similarly, Kwiotkowska (2023) identified that a combination of digital capabilities and EO contributes to high organizational resilience, emphasizing the importance of fostering an entrepreneurial mindset in the digital era. In the Chinese context, Qinghua et al. (2024) demonstrated that EO positively influences digital business model innovation and resilience, further supporting the mediating role of EO in the DT-OR relationship. The research conducted by (Awad & Martin-Rojas, 2024) found that digital transformation improves the organizational resilience of SMEs and similarly the study conducted by Zhang et at., (2025) also shows that DT significantly enhances OR. These findings underscore the need for SMEs to integrate digital technologies with entrepreneurial strategies to enhance resilience and sustain competitive advantage.

EO (innovativeness, proactiveness, risk taking) is theorized to direct strengthen resilience, empirical evidence in Nepalese SMEs suggests its impacts may be indirect, Lumpkin & Dess (1996).

H3: *Entrepreneurial orientation has a significant positive impact on organizational resilience in Nepalese SMEs.*

According to Qinghua et al. (2024), SMEs with stronger entrepreneurial traits are better positioned to translate digital initiatives into resilient capabilities, a perspective supported by dynamic capability theory.

H4: *Entrepreneurial orientation mediates the positive relationship between digital transformation and organizational resilience in Nepalese SMEs.*

Policy Review

The Digital Nepal Framework (2019) and the Disaster Risk Reduction Management Act (2017) are key policy initiatives in Nepal aimed at promoting digital transformation and building organizational resilience. The Digital Nepal Framework emphasizes the adoption of digital technologies across various sectors, while the Disaster Risk Reduction Management Act focuses on risk assessment and capacity building to enhance resilience (Giri, 2020; Tuladhar, 2017). Additionally, the Nepal Startup Policy (2023) and the 15th Five-Year Plan prioritize entrepreneurship and digital innovation, providing financial and technical support to SMEs for adopting digital technologies and fostering entrepreneurial growth. These policies highlight the government's commitment to creating an enabling environment for digital transformation and resilience-building in SMEs.

Conceptual Framework

The conceptual framework of this study illustrates the interplay between digital transformation (DT), organizational resilience (OR), and entrepreneurial orientation (EO) in Nepalese SMEs. DT serves as the independent variable, enhancing OR by enabling firms to adapt to technological changes and market disruptions. EO acts as a mediating variable, amplifying the effects of DT on OR by fostering a culture of innovation, proactiveness, and risk-taking. The framework posits that digitally transforming SMEs created a fertile environment for entrepreneurial mindset for resilience-building, highlighting the importance of integrating digital initiatives with entrepreneurial strategies.

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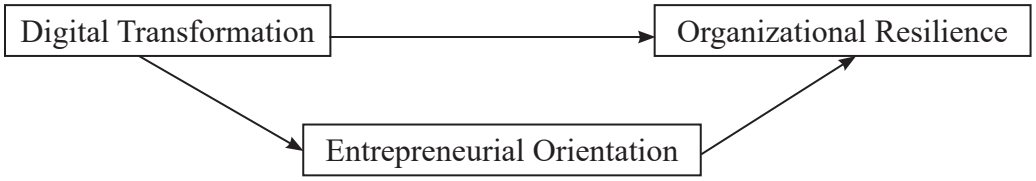
Figure 1

Conceptual Framework



Materials and Methods

Research Approach

The study employs a quantitative research approach using a cross-sectional survey design to examine the impact of digital transformation (DT) on organizational resilience (OR) among Nepalese SMEs, with entrepreneurial orientation (EO) as a mediating variable. The study follows a deductive approach, testing pre-established hypotheses through statistical analysis.

Research Design

A non-experimental, cross-sectional explanatory research design is used to investigate the relationships between DT, OR, and EO. Data were collected at a single point in time to analyze how these variables interact within Nepalese SMEs. The independent variable is digital transformation, the mediating variable is entrepreneurial orientation, and the dependent variable is organizational resilience.

Study Area and Population

The study focuses on SMEs operating within Kathmandu Valley, Nepal's largest business hub, where over 5,039 SMEs are registered (DOI, 2022/23). SMEs in Nepal are defined based on the size of investment in fixed assets or capital, with small enterprises having capital between NPR 2 million and 150 million, and medium enterprises having capital between NPR 150 million and 500 million (Industrial Policy, 2010). The selection of this region is based on its economic significance and the high concentration of SMEs, which serve as a representative sample of Nepalese SMEs.

Sampling and measurement

A non-probability convenience sampling technique was used to select SMEs. The sample size was determined using Daniel Soper's sample size calculation tool, based on an anticipated effect size of 0.20, a statistical power of 0.80, three latent variables, 32 observed variables, and a significance level of 0.05. The minimum required sample size was 296, but to enhance reliability, 400 questionnaires were distributed via email and printed form.

The measurement scale used for digital transformation is adopted and modified from (Nwankpa, 2016 & Chu, 2019) and the Cronbach's alpha reliability for the scale was 0.85, for Organizational Resilience the scale is adopted from (Kantur & Say, 2015), Cronbach's alpha reliability for the scale was 0.85 and for Entrepreneurial Orientation, scale is adopted from (Covin & Slevin, 1989). The EO contains three dimensions of EO (innovation, proactiveness, and risk taking) with three items on each dimension. The Cronbach's alpha coefficient for overall EO ranged from 0.72 (Arham, 2012) to 0.87 (Yang et al., 2008).

Research Instrument, Data collection and Analysis

Primary data were collected using a structured questionnaire administered via printed questionnaire and email surveys. It uses the 7 Likert scale from 1 to 7 for the DT construct, where (1= strongly disagree) and (7= strongly agree) and for the constructs OR and EO it uses 5 Likert scale from 1 to 5, where

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(1= strongly disagree) and (5= strongly agree). For studying this relationship researcher used three constructs i.e., digital transformation (5 items), organizational resilience (9 Items) and entrepreneurial orientation (18 items).

Google Forms were used for developing questionnaires and for online data collection and printed form were distributed for physical collection, where altogether questionnaire was sent to 400 respondents of SMEs (owners, employees, and managers) yielding 303 valid responses (response rate: 75.75 percent). Data were manually screened for missing values in Microsoft Excel before coding and statistical analysis. Hypothesis testing was carried out through the analysis of structural models and the analysis was conducted using R 4.4.1 software.

Results and Discussion

Descriptive statistics of demographic responses

The demographic variables of respondents include sex, age group, marital status, education level, position and business experience.

Table 1

Socio-demographic Characteristics

Demographic Variables	**Frequency**	**Percentage**
Sex		
Male	198	65.34
Female	105	34.65
Age (In years)		
Below 20	3	0.99
20-30	129	42.57
31-40	96	31.68
41-50	58	19.14
51-60	16	5.28
61 and above	1	0.33
Marital Status		
Single	125	41.25
Married	178	58.74
Educational Level		
Illiterate	1	0.33
Under SLC/SEE	1	0.33
Intermediate Degree	20	6.60
Bachelor's Degree	180	59.40
Master's Degree	89	29.37
Above Masters	12	3.96
Position		
Owner/Founder	46	15.18
Senior Management	62	20.46
Middle Management	149	49.17
Operational Staff	46	15.18

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Business Experience		
Less than 5 Years	81	26.73
5-15 Years	144	47.52
16-25 Years	59	19.47
26 Years and above	19	6.27

The socio-demographic characteristics of the respondents are summarized in Table 1. The majority of respondents were male (65.34 percent), reflecting a gender disparity in leadership and managerial roles within Nepalese SMEs. In terms of age, the largest group of respondents was between 20-30 years (42.57 percent), followed by those aged 31-40 years (31.68 percent), indicating a relatively young workforce. Most respondents were married (58.74 percent), which may suggest a higher level of personal responsibility and stability among participants.

Regarding educational attainment, the majority of respondents held a Bachelor's degree (59.40 percent), with a significant portion having a Master's degree (29.37 percent). This highlights the relatively high level of education among SME employees and owners in Kathmandu Valley, which may positively influence their ability to adopt digital technologies and foster entrepreneurial practices.

In terms of organizational roles, middle management (49.17 percent) constituted the largest group, followed by senior management (20.46 percent) and operational staff (15.18 percent). This distribution suggests that the respondents were well-positioned to provide insights into the operational and strategic aspects of their organizations.

Finally, nearly half of the respondents had 5-15 years of business experience (47.52 percent), while smaller proportions had less than 5 years (26.73 percent) or more than 16 years (25.74 percent) of experience. This indicates a mix of relatively experienced and newer entrants in the SME sector, providing a balanced perspective on the challenges and opportunities faced by these enterprises.

Table 2

Organizational Characteristics

Organization Type	**Frequency**	**Percentage**
Manufacturing	64	21.12
Service	90	29.70
Trading	78	25.74
IT/Tech	52	17.16
Others	19	6.27
Years of Operations		
Less than 5 Years	25	8.25
5-10 Years	75	24.75
11-20 Years	106	34.98
21 Years and Above	97	32.01
Organization Size (Capital)		
Up to 15 Crore	282	93.06
More than 15 crore-less than 50 crores	21	6.93

The organizational characteristics of the participating SMEs are presented in Table 2. The largest proportion of enterprises operated in the service sector (29.70 percent), followed by trading (25.74 percent) and manufacturing (21.12 percent). The IT/Tech sector (17.16 percent) and other industries (6.27 percent) represented smaller shares, reflecting the diverse nature of SMEs in Kathmandu Valley.

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In terms of years of operation, the majority of enterprises had been in business for 11-20 years (34.98 percent) or 21 years and above (32.01 percent), indicating a significant presence of well-established SMEs. A smaller proportion of enterprises had been operating for 5-10 years (24.75 percent) or less than 5 years (8.25 percent), suggesting that newer entrants face challenges in sustaining their operations.

Regarding organizational size, the vast majority of SMEs had a capital of up to NPR 15 crores (93.06 percent) regarded as small enterprises, with only a small fraction (6.93 percent) having capital between NPR 15 crores and 50 crores which are regarded as medium enterprises. This underscores the predominance of small-sized enterprises in the sample, which may face unique challenges in adopting digital technologies and building organizational resilience due to limited resources.

Inferential statistics of study variables

Common Method Bias using Harman's Single Factor Test

Harman's Single-Factor Test was conducted to check for common method bias since all variables were self-reported in the same measurement context. The test showed that a single factor accounted for 28.92 percent of the total variance, which is below the 50 percent threshold, indicating no significant common method bias and confirming that the relationships between variables are not heavily influenced by the measurement method (Podsakoff et al., 2003).

Collinearity Test

The VIFs obtained for all the variables values less than 3 indicates that there is no collinearity between the constructs DT, OR and EO.

Measurement model Assessment with reliability and validity

The first step in PLS-SEM is assessing the measurement (outer) model through reliability and validity tests. Reliability was evaluated using Cronbach's alpha (CA) and composite reliability (CR), with all constructs—Digital Transformation (0.807 CA, 0.882 CR), Organizational Resilience (0.869 CA, 0.916 CR), and Entrepreneurial Orientation (0.863 CA, 0.966 CR)—exceeding the 0.7 threshold, indicating strong internal consistency. Convergent validity was assessed using factor loadings, CA, and Average Variance Extracted (AVE), with all indicators showing loadings above 0.7 and AVE values of 0.861 (DT), 0.781 (OR), and 0.781 (EO), confirming strong construct representation. The results validate the robustness of the measurement model.

Discriminant Validity

Discriminant validity measures how well a construct and its indicators differ from other constructs (Bagozzi et al., 1991) and is tested using the Fornell-Larcker criterion and Heterotrait-Monotrait Ratio (HTMT). The Fornell-Larcker criterion requires that the square root of a construct's AVE be greater than its correlations with other constructs, while HTMT ensures inter-construct correlations remain below 0.85 (Henseler et al., 2015). As all criteria were met, the model confirms discriminant validity.

Table 3

Fornell-Larcker criterion test

Constructs	**DT**	**OR**	**EO**
DT	0.772	0.502	0.122
OR	0.502	0.839	0.275
EO	0.122	0.275	0.653

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The Fornell-Larcker criterion confirms discriminant validity by showing that the square root of the AVE (√AVE) for each construct—Digital Transformation (DT: 0.772), Organizational Resilience (OR: 0.839), and Entrepreneurial Orientation (EO: 0.653)—is greater than their correlations with other constructs. For example, DT's √AVE (0.772) is higher than its correlations with OR (0.502) and EO (0.122), and similar results are found for OR and EO. This ensures that each construct captures more variance within itself than it shares with others, confirming that DT, OR, and EO are distinct and measure unique dimensions.

Table 4

Heterotrait-Monotrait Ratio Result

Constructs	DT	OR	EO
DT	1.000		
OR	0.596	1.000	
EO	-0.250	-0.113	1.000

The Heterotrait-Monotrait (HTMT) ratio assesses discriminant validity in structural equation modeling to ensure constructs are distinct. With a threshold of 0.85, values below this indicate sufficient discriminant validity. In this analysis, the HTMT value between DT and OR is 0.596, confirming good discriminant validity. Additionally, the negative values for DT and EO (-0.250) and OR and EO (-0.113) indicate no significant overlap. Overall, all HTMT values are below the threshold, establishing that DT, OR, and EO are distinct and measure different theoretical constructs.

Goodness of fit

In PLS-SEM, the Model Fit Summary evaluates how well the model fits the data using measures like SRMR and NFI. A lower SRMR indicates a better fit, with a threshold of 0.08. In this analysis, the SRMR value of 0.0226 confirms an acceptable fit. Also, the NFI value of 0.466 falls below the recommended threshold of 0.90, suggesting goof fit.

Coefficient of Determination (R2)

R^2, or the coefficient of determination, measures the proportion of variance in the dependent variable explained by its predictors, indicating the model's predictive power. According to Chin (1998), R^2 values of 0.67, 0.33, and 0.19 represent substantial, moderate, and weak explanatory power, respectively. In this study, EO explains 21.10 percent of the variance (adjusted $R^2 = 0.2084$), indicating a moderate effect, while OR has a stronger relationship, with 42.96 percent of its variance explained (adjusted $R^2 = 0.4258$), confirming model robustness. These results highlight EO's critical mediating role in enhancing OR, supporting the hypothesis that EO strengthens the resilience of Nepalese SMEs undergoing digital transformation.

Table 5

Hypothesis testing and mediation analysis

Hypothesis	Estimate	B	t-Stat	p-Value	95% CI Percentile	Decision
H1 DT ~ OR	0.6010	0.0851	7.0629	0.0000	[0.4186; 0.7503]	Supported
H2 DT ~ EO	0.4593	0.2571	1.7869	0.0739	[-0.4538; 0.5975]	Not-supported
H3 EO ~ OR	0.2945	0.1563	1.8843	0.0595	[-0.2272; 0.4498]	Not-Supported
Indirect Effect	**Estimate**	**Std. Error**	**t-Stat**	**p-Value**	**95% CI Percentile**	
H4 DT ~ OR (via EO)	0.1353	0.0511	2.6489	0.0081	[0.0635; 0.2431]	Supported

The hypothesis test results showed that H1 and H4 are supported, while H2 and H3 are not. The bootstrapping technique with a 1,000-sample size was used to test four hypotheses. H1, which examines

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the impact of Digital Transformation (DT) on Organizational Resilience (OR), was supported (β = 0.0851, t = 7.0629, p < 0.05). H2, which tests the effect of DT on Entrepreneurial Orientation (EO), was not supported (β = 0.2571, t = 1.7869, p = 0.0739). H3, which investigates whether EO affects OR, was also not supported (β = 0.1565, t = 1.843, p = 0.0595). However, H4, which examines the mediating effect of EO in the relationship between DT and OR, was supported, showing a significant positive mediating effect.

The findings of this study contribute to the growing body of literature on the relationship between digital transformation (DT) and organizational resilience (OR), particularly in the context of Nepalese SMEs. The study confirms that DT has a significant positive impact on OR, aligning with prior research by Warner et al. (2019), Omoush et al. (2025), and Ivanov et al. (2019), which highlight the role of digitalization in enhancing business strategy, crisis preparedness, and innovation. In Nepal, SMEs leveraging digital tools demonstrate improved operational efficiency, customer engagement, and agility in navigating market disruptions. However, challenges such as high adoption costs, digital literacy gaps, and inadequate infrastructure remain barriers to maximizing these benefits. The study further underscores the need for government support in developing digital infrastructure, providing financial incentives, and promoting digital literacy to ensure a more resilient SME sector.

The study also investigated the relationship between DT and entrepreneurial orientation (EO), revealing an unexpected lack of significant impact in the Nepalese SME context. This contrasts with findings by Nambisan (2017) and Li et al. (2018), who established a positive link between DT and EO in other settings. This divergence may be attributed to contextual factors, including regulatory hurdles, slow technological adoption, and cultural resistance to risk-taking and innovation. Additionally, external constraints such as small market size, weak competition, and restrictive policies may dampen the need for entrepreneurial dynamism. Future research should adopt qualitative and longitudinal approaches to further explore these contextual limitations and identify potential moderating factors. Despite this, the study reaffirms the positive influence of EO on OR, consistent with the findings of Linnenluecke (2017), Duchek (2020), and Bullough & Renko (2013), emphasizing the role of proactive, innovative, and risk-taking behaviors in building resilient organizations. Moreover, the study highlights EO as a crucial mediating factor in the DT-OR relationship, suggesting that the full resilience benefits of digital transformation can only be realized when SMEs cultivate an entrepreneurial mindset. This supports the resource-based view (RBV) and dynamic capabilities theory, which stress the importance of internal competencies in leveraging external resources. From a managerial and policy perspective, fostering entrepreneurial skills, strategic risk-taking, and leadership in digital adoption is essential for enhancing SME resilience. Future research should explore additional mediators, such as organizational culture and leadership style, while longitudinal studies could assess how the DT-EO-OR relationship evolves as digital maturity increases.

Conclusion and Suggestions

This study provides insightful information about how digital transformation might strengthen SMEs resilience in the Kathmandu Valley. The findings show that organizational resilience is significantly influenced by digital transformation, that helps organizations whether shocks and adjust to shifting market conditions. The study also shows that this relationship is mediated by entrepreneurial orientation, which strengthens the effect of digital transformation on resilience. According to these results, SMEs can increase operational effectiveness, improve decision-making and maintain business continuity even in unpredictable situations by integrating digital technologies. Additionally, although entrepreneurial orientation was not found to have direct relationship with organizational resilience, the mediating function implies that the advantage of entrepreneurial mindset is reinforced by the DT environment. Combining digital adoption with entrepreneurial agility can give Nepalese SMEs a strategic advantage

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against economic uncertainties, competitive pressure and external shocks. Policies and support systems should prioritize both accelerating digital transformation and developing entrepreneurial capabilities in order to create a resilient SME sector, which will ultimately lead to long-term economic development, job creation and sustainable business growth.

Theoretically, future studies should expand beyond Dynamic Capabilities Theory by integrating frameworks like the Resource-Based View or Institutional Theory and explore additional mediating or moderating variables, such as organizational culture or leadership styles, while also conducting cross-cultural comparisons to understand contextual differences. Methodologically, adopting a mixed-methods approach, conducting longitudinal studies, and expanding sample size and diversity across regions and industries would enhance the robustness and generalizability of findings. Practically, promoting digital literacy, fostering an entrepreneurial mindset, and providing government support through incentives, infrastructure, and public-private partnerships are crucial for SMEs to effectively leverage DT for resilience.

For enhancing SMEs resilience and digital transformation in Nepal, policymakers should invest in affordable digital infrastructure, provide training program to improve digital literacy and offer financial incentives like tax breaks, subsidies or grants for technology adoption to SMEs. Strengthening entrepreneurial culture through innovation-focused initiatives and aligning policies like Digital Nepal Framework with resilience goals are crucial. Additionally, fostering collaborative eco-system among SMEs, tech firms and institutions along with monitoring progress through a national dashboard, will ensure sustainable growth and adaptability in a dynamic business environment of Nepal.

Author contribution statement

The author solely conceptualized and designed the study, conducted an extensive review of relevant literature, developed the research framework. Data collection, analysis, and interpretation were entirely carried out by the author. The author also wrote, edited, and finalized the manuscript for publication solely.

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Declaration statement

The authors declare no conflict of interest.

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Appendix: Survey instruments

Instrument 1: Digital Transformation (Nwankpa, 2016 & Chu, 2019)

- Our firm actively leverages digital technologies such as AI, big data, IoT, digital payment system, mobile technologies and social media to improve business processes.
- Our firm is integrating digital technologies such as AI, big data, IoT, digital payment system, mobile technologies and social media for operational change.
- Our day-to-day business operations increasingly rely on digital tools such as AI, big data, IoT, digital payment system, mobile technologies and social media.
- Our firm is designing and delivering products and services using innovative digital techniques and tools to meet customer needs.
- We actively promote digital knowledge and capabilities within the organization to strengthen our digital transformation efforts.
- Instrument 2: Entrepreneurial Orientation (Covin & Slevin, 1989)

Dimension (i) Innovativeness

- In general, top managers of my firm favor a strong emphasis on the marketing of tried-and-true products and services.
- In general, the top managers of my firm favor a strong emphasis on R&D, technological leadership, and innovations.
- How many new lines of products or services has your firm marketed in the past 5 years? No new lines of products or services.
- How many new lines of products or services has your firm marketed in the past 5 years? Very many new lines of products or services.
- Changes in product or service lines have been mostly of a minor nature.
- Changes in product or service lines have usually been quite dramatic.

Dimension (ii) Pro-activeness

- In dealing with its competitors, my firm typically responds to actions to which competitors initiate.
- In dealing with its competitors, my firm typically initiates actions which competitors then respond to.
- Is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc.
- Is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.
- Typically seeks to avoid competitive clashes, preferring a 'live-and-let-live' posture.
- Typically adopts a very competitive, undo-the-competitors' posture.

Dimension (iii) Risk Taking

- In general, the top managers of my firm have strong proclivity for low-risk projects (with normal and certain rates of return).
- In general, the top managers of my firm have strong proclivity for high-risk projects (with chances of very high returns).
- In general, top managers of my firm believe that owing to the nature of the environment, it is best to explore it gradually via timid, incremental behavior.
- In general, top managers of my firm believe that owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.
- When confronted with decision-making situations involving uncertainty, my firm typically adopts

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a cautious, 'wait-and-see' posture in order to minimize the probability of making costly decisions.
- When confronted with decision-making situations involving uncertainty, my firm typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities.

Instrument 3: Organizational Resilience (Kantur & Say, 2015)
- My organization is a place where all the employees are engaged to do what is required from them.
- My organization is successful in acting as a whole with all of its employees.
- My organization stands straight and preserves its position.
- My organization is successful in generating diverse solutions.
- My organization shows resistance to the end in order not to lose.
- My organization does not give up and continues its path.
- My organization rapidly takes action.
- My organization develops alternatives in order to benefit from negative circumstances.
- My organization is agile in taking required action when needed.