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# Digital transformation and financial innovation as drivers of firm resilience: evidence from Jordanian financial market

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## Abstract

**Purpose** – The purpose of this study is to investigate the impact of digital orientation, digital capability and absorptive capacity on digital transformation. This study further examines how digital transformation, in turn, influences financial innovation and firm resilience in the context of Jordanian financial market.

**Design/methodology/approach** – Data were collected through a questionnaire survey administered to financial firms in Jordan. A total of 162 valid responses were analyzed using partial least squares structural equation modeling to test and validate the proposed research hypotheses.

**Findings** – The results of this study reveal that digital orientation and digital capability have a significant positive impact on digital transformation, whereas absorptive capacity does not exhibit a statistically significant effect. The findings of this study further confirm that digital transformation has a positive and significant influence on both financial innovation and firm resilience. Finally, this study validates that financial innovation positively impacts financial firms' resilience.

**Research limitations/implications** – This is cross-sectional research and data were collected at a single time frame from financial firms in Jordan. Hence, the findings may not be fully applicable to other contexts. Furthermore, cross-sectional data restricts our ability to capture the dynamic and evolving nature of digital transformation, as it is a continuous process.

**Practical implications** – The findings encourage financial firms to embrace digital transformation by investing in advanced technologies and strengthening their digital capabilities to foster innovation and resilience. Developing internal capacity through employee training, digital literacy and strategic FinTech partnerships is vital. When aligned with objectives such as regulatory compliance, customer trust and sustainable growth, these initiatives can accelerate innovation while enhancing firms' ability to withstand market disruptions.

**Originality/value** – To the best of the authors' knowledge, this study is among the first empirical investigations to examine how digital transformation–driven financial innovation enhances the resilience of financial firms in the context of a developing economy such as Jordan.

**Keywords** Digital transformation, Digital innovation, Financial innovation, Firm resilience, Financial market

**Paper type** Research paper

## 1. Introduction

The stability of the global financial system has been severely impacted by financial risks, posing significant long-term challenges for firms in terms of survival and sustainable development. Firms must often navigate external disruptions that are typically unpredictable and beyond a firm's control, making them particularly threatening (Yang *et al.*, 2025). The increasing frequency of pandemics, political instability and financial crises has heightened firms' awareness of the need to develop effective response capabilities (Xu *et al.*, 2024). For instance, the COVID-19 pandemic delivered sustained shocks to the Jordanian economy, causing severe damage to many financial

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firms (Al-Okaily, 2025a, 2025b, 2025c, 2025d, 2025e). Faced with such an adverse environment, firms need to think about how to survive and maintain resilience to cope with the challenges posed by current shocks (Luo *et al.*, 2025). Financial firms must focus on enhancing their resilience to better navigate rapidly changing environments and create sustainable competitive advantages. The increasing digitization of economies has further underscored the critical role of digital transformation and innovation in enabling firms to enhance resilience and maintain competitiveness (Al-Okaily *et al.*, 2025). Digital transformation is increasingly recognized as a deliberate and strategic repositioning of firms in the digital economy, enabling them to effectively navigate challenges and mitigate the effects of external crises (He *et al.*, 2023). Globally, firms have invested approximately US$2tn in digital transformation initiatives (Velyako and Musa, 2024). The literature identifies digital orientation, digital capability and absorptive capacity as key factors influencing the success of digital transformation initiatives. A strong digital orientation enables firms to recognize the value of digital innovation and proactively pursue digital opportunities (Shah *et al.*, 2024). Firms with well-developed digital capabilities are better equipped to integrate digital tools into their operations, optimize processes and create value (Mai *et al.*, 2024; Alazmi, 2023). Furthermore, firms with high absorptive capacity are more capable of adapting digital solutions to their specific contexts and sustaining innovation over time (Tran *et al.*, 2022). However, digital orientation, digital capability and absorptive capacity combined influence on digital transformation is still underexplored in emerging financial markets.

Digital transformation plays a crucial role in mitigating risk and enhancing efficiency by overcoming traditional time and space constraints (Chen *et al.*, 2023). Firms that embrace digital transformation are better equipped to formulate effective strategies in response to adverse environmental changes, thereby demonstrating greater resilience (Kyrdoda *et al.*, 2023). Recent research has increasingly highlighted how digital transformation facilitates the delivery of innovative financial services at reduced costs, enhancing competitiveness and operational efficiency (Dasilas and Karanović, 2025; Al-Okaily, 2025a, 2025b, 2025c, 2025d, 2025e). Financial firms, particularly in resource-constrained developing countries, are increasingly adopting digital technologies to reduce operational expenses, expand financial inclusion and improve profitability (Wang *et al.*, 2024). As a dynamic capability, digital transformation is widely recognized for fostering long-term success in volatile markets and significantly strengthening financial resilience (Velyako and Musa, 2024). However, most empirical studies have primarily focused on the relationship between digital transformation and digital innovation (Hongyun *et al.*, 2025; Shah *et al.*, 2024), while offering limited insights into its impact on financial innovation. This study seeks to address this gap by examining how digital transformation influences both financial innovation and firm resilience, particularly within the context of developing economies. Financial innovation also has a pivotal role in enhancing firm resilience, particularly in the face of dynamic and uncertain market environments (Hussain and Papastathopoulos, 2022). Financial innovation enables organizations to diversify funding sources, increase liquidity and optimize cost structures, all of which contribute to greater operational flexibility and sustainability during periods of instability (Nkundabanyanga *et al.*, 2020). In volatile economic contexts, financial innovation also helps firms build adaptive capabilities by offering more efficient solutions for investment, credit access and resource mobilization (Abbas *et al.*, 2024). Nevertheless, there is a lack of empirical research investigating the impact of financial innovation on financial resilience. This study aims to bridge this gap by exploring the extent to which financial innovation contributes to enhancing firm resilience in the Jordanian financial market.

Grounded in the resource-based view (RBV) and the dynamic capabilities view (DCV), our current empirical research aims to investigate the influence of digital

orientation, digital capability and absorptive capacity on digital transformation. It further examines how digital transformation, in turn, affects financial innovation and firm resilience within the Jordanian financial market. Specifically, our current study mainly explores three research questions. First, what is the impact of digital orientation, digital capability and absorptive capacity on digital transformation within financial firms? Second, does digital transformation promote financial innovation and financial firms' resilience? Third, does financial innovation enhance the financial firm's resilience? By exploring the above questions, this study would provide the following contributions. In theoretical contribution, we propose and empirically validate a comprehensive model that explains how digital transformation drives financial innovation, which in turn enhances financial resilience within Jordan's financial market. In managerial implication, we provide a new perspective for financial firms to improve their resilience by leveraging digital transformation and financial innovation.

The next section of this paper begins with a review of the relevant literature related to the study's focus, followed by the development of theoretical frameworks and hypotheses. Subsequently, we present research methodology and data analysis. This paper concludes with a discussion of the findings, theoretical and practical contributions and suggestions for future research.

## 2. Literature review

### *2.1 Digitalization and financial innovation*

The digital revolution has enabled an ongoing transformation of financial service provision. The recent technological changes enabling financial innovation are mostly related to the digital revolution and the consequent explosion in data creation and availability and the possibility to process these data in an efficient manner (Setiawan *et al.*, 2025; Manasseh *et al.*, 2025). Digital transformation is commonly defined as a fundamental change process enabled by digital technologies, aimed at achieving radical improvements and innovations within an organization, business network, industry or society, thereby creating value for stakeholders by strategically leveraging critical resources and capabilities (Saeedikiya *et al.*, 2025). Digital transformation can be seen as a disruptive force in the banking, finance and insurance sectors, leading to the emergence of new activities and innovative players while simultaneously displacing some traditional ones (Abbas *et al.*, 2024). This transformation relies on a combination of emerging technologies such as artificial intelligence, cloud computing, blockchain and big data (Abdelwaheed *et al.*, 2025). By adopting technologies such as artificial intelligence, big data, blockchain and cloud computing, financial institutions create new products (e.g. mobile payments and robo-advisors), improve processes through automation and data analytics and develop new business models like open banking (Ngong *et al.*, 2024; Qayyum *et al.*, 2025). Financial innovations have improved saving, borrowing, investment and payment behaviors, enhanced welfare, reduced the cost of capital without proportionally increasing systemic risk and expanded access to capital and liquidity (Kumar and Rani, 2025). Financial firms depend on such digital technologies to drive business growth, strengthen customer engagement and remain competitive in global markets (Edo, 2025). Today, both developed and developing economies depend on digital technologies to drive financial innovation and remain competitive in global markets (Baig *et al.*, 2024). The literature confirms multiple benefits of financial innovation, including improved savings, investment and payment behaviors, enhanced welfare and expanded access to capital and liquidity, often without a proportional increase in systemic risk (Kumar and Rani, 2025). In addition, financial firms that actively integrate digital technologies and develop complementary digital capabilities demonstrate superior innovation performance and

stronger competitive positioning (Hongyun *et al.*, 2025; Shah *et al.*, 2024). However, existing research has two key limitations. First, most studies focus on developed economies, which constrains the applicability of their findings to emerging financial markets. Second, while prior research often investigates the impact of digital transformation in financial markets, it does not offer much information about the mechanisms through which digital initiatives drive financial innovation, especially in contexts with unique regulatory, infrastructural and market conditions. Thus, the digital transformation impact on financial innovation and its role in strengthening firm resilience remains underexplored in developing economies such as Jordan. Addressing this gap is crucial for uncovering context-specific strategies that enable firms in emerging markets to leverage digital technologies for both sustainable financial innovation and enhanced firm resilience.

### *2.2 Firm resilience*

In a turbulent and rapidly evolving business environment, firm competitiveness does not follow a smooth trajectory; rather, it stems from continuous adaptation to changing conditions, making resilience a crucial aspect. Firm resilience is defined as a dynamic ability of an enterprise to anticipate potential threats, respond to and recover from adverse events and adapt to changing environments (Chen *et al.*, 2023). The primary aim of cultivating resilience is to enhance a firm's capacity to withstand crises and recover to its original state with minimal cost and effort after disruptive events (Liu *et al.*, 2024; Trieu *et al.*, 2025). Firm resilience encompasses the three phases of absorptive capacity, adaptive capacity and restorative capacity, each of which represents the temporal attributes of readiness, responsiveness and recovery (Yang *et al.*, 2025). Financial firms with strong resilience can endure unavoidable changes, mitigate their negative effects and sustain operations (Xu *et al.*, 2024). Furthermore, resilient firms may not only return to their prior state after disruption but can also evolve into a more advanced state with greater capabilities to address future challenges (Wang *et al.*, 2025). In the digital era, it mainly manifests in the following aspects: the ability of enterprises to resist challenges and restore to the original state by digital means facing crisis, enterprises use digital means to surpass the original situation and become more powerful (Browder *et al.*, 2024). It helps firms recover from negative environments and maintain long-term continuity (Ye *et al.*, 2025). Prior research offers converging evidence that resilient financial firms can withstand unavoidable changes and mitigate negative consequences while sustaining operations (Xu *et al.*, 2024). In the digital era, resilience increasingly manifests through the strategic use of digital technologies. For example, Browder *et al.* (2024) argue that digital capabilities allow firms to not only restore operations after crises but also surpass prior performance thresholds, while Ye *et al.* (2025) emphasize that digital interventions help maintain continuity in volatile environments. Empirical studies have highlighted the role of digital transformation in improving resource allocation efficiency, flexibility and operational responsiveness, thereby supporting firm resilience (Xu *et al.*, 2024). Similarly, financial innovation has been linked to resilience-enhancing mechanisms such as robustness and adaptability, which are essential for survival in complex and digitalized markets (Hussain and Papastathopoulos, 2022). Despite these insights, extant research remains fragmented and contextually limited. Most studies focus on developed economies, providing insufficient evidence regarding how digital transformation and financial innovation affect resilience in emerging financial markets. Moreover, the specific mechanisms through which these digital and financial interventions interact to enhance resilience remain underexplored, particularly in contexts such as Jordan, where regulatory, infrastructural and market dynamics differ substantially from advanced economies. Addressing this gap is crucial, as it can illuminate the strategies and processes through which

financial firms in emerging markets can leverage digital capabilities and financial innovation to not only survive but thrive amid environmental volatility.

### *2.3 Theories*

The RBV was introduced in management literature to explain how firms secure a competitive position through internal resources that are valuable, rare, inimitable and non-substitutable (Barney, 1991). This theory underscores the role of technological capabilities, human capital and innovation; it tends to treat resources as relatively stable and does not offer much information about how firms leverage them under conditions of volatility. The DCV extends this view by emphasizing a firm's ability to sense opportunities, seize them and reconfigure resources to respond to rapid change (Teece *et al.*, 1997). In the resilience context, RBV highlights the stock of resources such as digital infrastructures and specialized knowledge that positions firms for advantage, whereas DCV captures the dynamic processes through which these resources are continually recombined to withstand disruptions. This distinction is particularly salient in developing financial markets, where regulatory uncertainty, technological gaps and institutional fragility make resilience less a function of static assets and more a function of adaptive capabilities. Recent studies not only illustrate this interplay but also reveal gaps. Rupeika-Apoga *et al.* (2022) show that digital orientation and capability drive digital transformation, aligning with RBV's emphasis on leveraging unique resources, yet their work underexplores how these capabilities evolve under turbulence. Similarly, Tran *et al.* (2022) find that absorptive capacity fosters deeper digital transformation, but the mechanisms linking absorptive capacity to resilience remain under-theorized. Abdelwahed and Bano (2024) position digital transformation as an innovation process enabling adaptation, but the resilience implications are only implied. In contrast, Velyako and Musa (2024) explicitly link resilience to the reconfiguration of resources, pointing to DCV's explanatory power. In this regard, synthesizing across these studies suggests that RBV explains what resources financial firms must cultivate, while DCV explains how these resources are mobilized to adapt to shocks and sustain performance. Integrating RBV and DCV offers a richer theoretical framework for resilience in financial firms, especially in emerging markets where external volatility is high. By grounding resilience in both resource endowments and dynamic reconfiguration processes, this view explains not only how firms achieve digital transformation and innovation but also how they build the adaptive capacity to survive and thrive amid institutional and market uncertainty. Figure 1 illustrates the proposed research model and its relationships. The proposed model posits that digital orientation, digital capability and absorptive capacity drive digital transformation, which in turn fosters financial innovation and strengthens firm resilience. Grounded in RBV and DCV, the model highlights how valuable resources and adaptive capabilities enable firms, particularly in emerging markets, to navigate environmental volatility and build long-term resilience.

## 3. Hypotheses

### *3.1 Digital orientation*

Digital orientation refers to a firm's commitment to leveraging digital technologies to develop innovative products, services and solutions within a digital context (Abdelwaheed *et al.*, 2025; Khin and Ho, 2019). Digital-oriented firms are more willing to use digital technologies to change the existing business processes and design solutions based on new technologies (Sahibzada *et al.*, 2024). Firms with digital orientation accelerate the process of integrating digital technologies into process innovation, as they can develop digital thinking and improve the enthusiasm of digital transformation (Ranjan, 2025). Digital orientation provides a guided direction for implementing corporate digitalization and accelerates overall organizational change (Liu *et al.*, 2024). Based on RBV, digital orientation is a valuable strategic resource that has important qualities like being

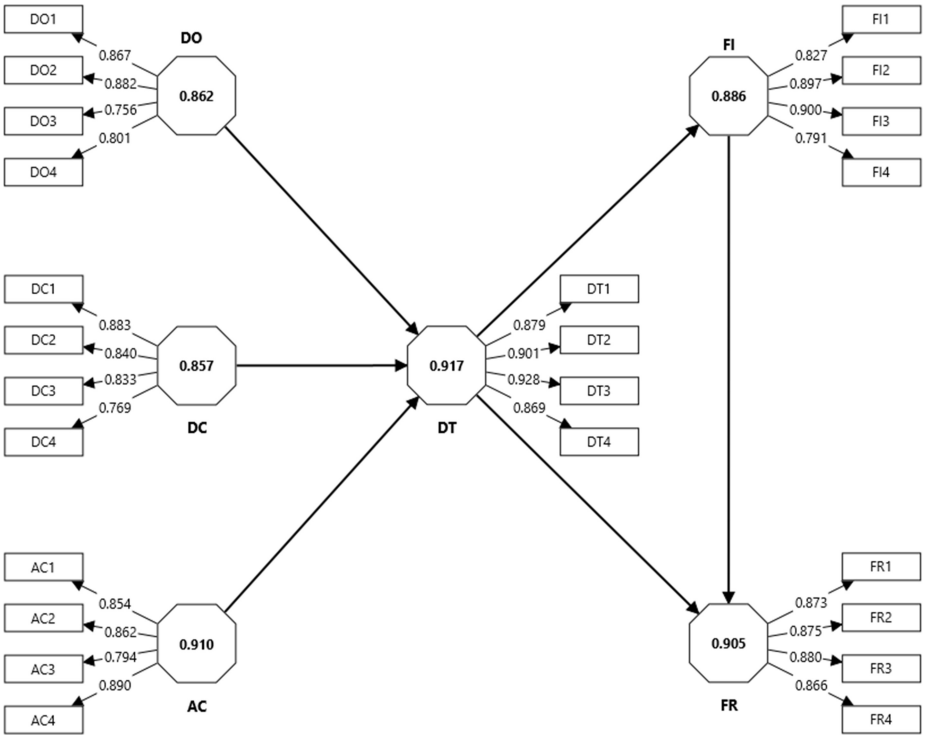


**Figure 1.** Measurement model
**Source:** Figure by authors

valuable, rare, hard to copy and irreplaceable, which can help a company gain a lasting edge in the digital economy. Earlier studies have identified digital orientation as an important factor for gaining a lasting competitive edge and improving company performance (Kautish *et al.*, 2025; Marczewska *et al.*, 2025). A large body of research has acknowledged that digital orientation enhances digital transformation. For example, Barba-Sánchez *et al.* (2024) found that digital orientation has a positive influence on digital transformation. Shee and Kaswi (2023) reported a significant relationship between digital orientation and digital transformation. Likewise, Rupeika-Apoga *et al.* (2022) confirmed that digital orientation positively impacts digital transformation. More empirical research concerning the positive effects of digital orientation on digital innovation are still needed (Barba-Sánchez *et al.*, 2024). Thus, we proposed:

*H1*. There is a positive and significant nexus between digital orientation and digital transformation.

### *3.2 Digital capability*

Digital capability is essential for the survival and growth of new ventures and supports the transformation and advancement of established enterprises (Velyako and Musa, 2024). As a dynamic capability, it reflects a firm's ability to create new products and processes while

adapting to market changes (Abdelwaheed *et al.*, 2025). Technology affordances shape digital capability and encompass organizational efforts to develop and maintain procedures that leverage human capital and knowledge assets in conjunction with specific digital technologies (Sahibzada *et al.*, 2024). It also represents an organization's capacity to respond swiftly to shifts in the business environment and generate digital value to sustain a competitive edge (Shah *et al.*, 2024). The capability to transform a broader resource base to execute a digital strategy is essential in the digital economy to maintain competitiveness even in a highly changing environment (Wahyuningtyas *et al.*, 2023). Based on the DCV, digital capability represents an organization's dynamic ability to develop business models and processes to respond to market evolution (Kastelli *et al.*, 2024). Rahman *et al.* (2025) argued that digital transformation cannot succeed without developing the digital capabilities that make transformation actionable and sustainable. Past research recognizes digital capability as a critical enabler of digital transformation. For instance, Mai *et al.* (2024) found that digital capability significantly enables digital transformation at the firm level. Likewise, Prakasa and Jumani (2024) underscore that digital capability fosters digital transformation within the broader context of the digital economy. Similarly, Zhang *et al.* (2024) report that digital capability exerts a positive influence on digital transformation. Thus, we hypothesize that:

*H2.* There is a positive and significant nexus between digital capability and digital transformation.

### *3.3 Absorptive capacity*

Absorptive capacity generally refers to a firm ability to absorb intangible resources, such as knowledge, and transform them into unique dynamic capabilities that are difficult for competitors to imitate (Siachou *et al.*, 2021). It has been described as an organization's capacity to recognize, assimilate and effectively and constructively use new knowledge obtained from external sources (Boroomand and Chan, 2024). Digital transformation requires firms to integrate emerging technologies across their operations, business models and strategies to create new value (Kastelli *et al.*, 2024; Lee *et al.*, 2024). As digital technologies rapidly evolve, firms must enhance their absorptive capacity, which refers to their ability to identify, assimilate and incorporate these technologies, to remain competitive (Tallarico *et al.*, 2025). A strong absorptive capacity reduces the costs of acquiring, transforming and applying knowledge, enabling firms to build valuable knowledge stocks and enhance their innovative capabilities (Hashem, 2024; Lozada *et al.*, 2023), thereby improving their innovation advantage. Absorptive capacity is essential for adapting existing practices and capturing new opportunities, as it bridges the gap between current knowledge and emerging digital technologies (Kastelli *et al.*, 2024). Firms with strong absorptive capacity often demonstrate clearer digital strategies, more effectively implemented infrastructures and undergo more profound digital transformations, especially when coupled with high levels of technological proficiency (Chang *et al.*, 2025; Tran *et al.*, 2022). Numerous research papers have shown a significant influence of absorptive capacity on digital transformation (Tran *et al.*, 2022; Malik *et al.*, 2024). However, absorptive capacity impact on digital transformation remains insufficiently explored, making this an important focus of our study. Hence, it is hypothesized that:

*H3.* There is a positive and significant nexus between absorptive capacity and digital transformation.

### 3.4 Digital transformation

Digital transformation is inherently intertwined with strategic shifts in business innovation models through the integration of digital technologies (Awad and Martín-Rojas, 2024). It is perceived as an avenue for fostering innovation, enabling firms to generate fresh ideas and to adapt more quickly to new product and service development as well as evolving market demands (Saeedikiya *et al.*, 2025). The goal of digital transformation is to alter the existing situation and to create new production processes, new products or services and new markets, thus bolstering a firm's innovative capacity (Hu *et al.*, 2024). Firms' digital transformation also influences the structure and administration of ecosystems and how companies and industries organize themselves to foster innovation in a digital environment (Abdelwahed and Bano, 2024). Digital transformation can enhance the connectivity of innovation networks, accelerate the pace of digital integration, increase knowledge heterogeneity, raise the integration requirements within innovation networks and reshape the processes of knowledge creation and sharing (Olsson *et al*., 2025). In addition, it is widely regarded as an enabler for developing dynamic organizational capabilities, allowing firms to rapidly sense and respond to changes in the digital business environment (Trieu *et al.*, 2025). Beyond simply adopting emerging technologies, digital transformation entails a strategic reconfiguration of processes and business models to foster financial innovation and adaptability in today's digital economy (Setiawan *et al.*, 2025). This comprehensive realignment extends to a firm's people and systemic processes, challenging the status quo and promoting a culture of change and learning from failures (Tang *et al*., 2025). Furthermore, it can effectively reduce enterprise costs and improve production, operational and management efficiency, enabling firms to better align with highly dynamic external environments and to enhance their resilience during crises (Yang *et al*., 2024; Zhan and Li, 2024). Earlier research indicates that digital transformation is a key driver of both innovation and firm resilience. In this regard, Hongyun *et al*. (2025), Shah *et al*. (2024) and Zhang *et al*. (2024) provide evidence that digital transformation can promote firm innovation in the digital landscape. Likewise, Xu *et al*. (2024), Yang *et al*. (2025) and Putritamara *et al*. (2023) report that digital transformation enhances firms' ability to respond to and recover from unexpected challenges, thereby strengthening their overall resilience. Thus, we posit:

*H4.* There is a positive and significant nexus between digital transformation and financial innovation.

*H5.* There is a positive and significant nexus between digital transformation and firm resilience.

### 3.5 Financial innovation

The development of financial innovation is contingent upon the establishment of an ecosystem, which is a crucial element in fostering the efficiency of financial markets and systems (Al-Okaily *et al*., 2025; Anshari *et al*., 2020). Digital financial innovation involves the introduction of novel instruments that enhance the effectiveness and efficiency of services offered by financial institutions (Abbas *et al*., 2024). It further spans various financial processes, including capital market activities, credit scoring, banking connectivity, risk management, asset securitization and trade processing (Baig *et al*., 2024). Progress in digital financial innovation can, in turn, strengthen the financial resilience of markets by lowering transaction costs, enhancing innovation and accelerating liquidity flows (Liu and Chen, 2022). Financial innovations play a vital role in upgrading firms' resilience through financial robustness and adaptability as elements of financial resilience (Hussain and Papastathopoulos, 2022). The

firm's adaptability can be conceptualized as an organization's capability to remain comparatively intact through its life cycle (Chang *et al.*, 2025). Financial innovation can help firms escape by bringing operations back to normal, the crisis can be institutionalized and path dependency can be broken and developing new strategies (Velyako and Musa, 2024). The existing literature indicates that innovation in products and services, coupled with advancements in digital technology, enhances firm resilience (Homayoun et al., 2024). Hussain and Papastathopoulos (2022) and Al-Okaily and Al-Okaily (2025a, 2025b) found that digital financial innovation exerts a positive influence on financial resilience, particularly by strengthening robustness and adaptability. Likewise, Velyako and Musa (2024) and Xia *et al.* (2024) found that digital innovation positively impacts firm resilience. Therefore, we hypothesize that:

*H6.* There is a positive and significant nexus between financial innovation and firm resilience.

## 4. Methodology

### *4.1 Research setting*

This research focuses on financial market firms located in Jordan. Jordan's financial market is in a developmental phase with significant potential for growth, supported by a range of institutions such as banks, insurance companies and investment firms. This sector has expanded considerably, driven by digital transformation and innovation (Al-Okaily *et al.*, 2024). Aligned with Vision 2025, the Jordanian Government has prioritized digital transformation as a key pillar of national modernization. Through the Ministry of Digital Economy and Entrepreneurship, several initiatives have been launched to enhance competitiveness, develop human capital, foster innovation and support startups through incubation, training, mentorship and financial assistance. Furthermore, Jordan is actively integrating Industry 4.0 practices through national strategies on cybersecurity, blockchain, big data and artificial intelligence (Al-Okaily, 2024a, 2024b). A major component of these reforms is the adoption of financial technology (FinTech), which is transforming the financial sector by improving efficiency, security and accessibility. The Central Bank of Jordan has advanced this agenda by establishing a regulatory sandbox, enabling FinTech startups to test innovative solutions in a controlled environment. Overall, we specifically chose financial market firms in Jordan for this study for two main reasons. First, Jordan is steadily advancing toward a digital economy, with financial firms and their innovative digital solutions playing crucial roles in this transformation (Al-Okaily, 2025a, 2025b, 2025c, 2025d, 2025e). Second, there is an urgent need to understand how financial innovation can help financial firms enhance their growth and, in turn, contribute to the national economy.

### *4.2 Measurement instrument*

The measurement operationalization for all research constructs was extracted from prior literature. The specific operationalization of each construct is presented in Appendix. The measurements used to assess digital orientation, digital capability and absorptive capacity were adapted from the studies by Khin and Ho (2019), Wei *et al.* (2025), Marczewska *et al.* (2025), Abdelwahed and Bano (2024) and Tran *et al.* (2022). The digital transformation construct was assessed using scales adapted from Abdelwaheed *et al.* (2025) and AlNuaimi *et al.* (2022). The financial innovation construct was gauged using items adapted from Chang *et al.* (2025) and Hussain and Papastathopoulos (2022). The firm resilience construct was

measured using items adopted from Trieu *et al.* (2025), Chen *et al.* (2023) and Xia *et al.* (2024). Each indicator has been assessed using a five-point Likert scale. A native speaker proficient in both English and Arabic translated the initial version of the questionnaire from English into Arabic. Subsequently, experts and professionals with extensive knowledge of digital technology and innovation reviewed the questionnaire to identify any issues related to clarity and precision. The pretest resulted in modifications to some measures following the experts' feedback.

### *4.3 Sampling and data gathering*

The research sample consists of financial market firms operating in Jordan. A non-probability purposive sampling method was applied to select the most knowledgeable informant for the topic under investigation. This research focuses on upper management decision-makers in financial firms, such as financial, technology and business managers who have expertise in digital technology and financial innovation. These respondents were chosen because they are directly involved in shaping strategies and policies that support financial innovation and long-term organizational sustainability. A common rule of thumb applied for estimating the minimum sample size is the "10-times rule" (Kock and Hadaya, 2018). This rule suggests that the minimum sample size should exceed ten times the highest number of structural (inner) or measurement (outer) model paths directed toward any single latent construct in the model. Based on this criterion, the minimum required sample size for our research model was determined to be 60 participants. In addition, a power analysis was conducted using G*Power, assuming a medium effect size ($f^2 = 0.15$), a statistical power of 0.95, a significance level of 0.05 and five predictors. The analysis indicated that a minimum of 138 participants were required to achieve sufficient statistical power. In this study, a total of 300 structured questionnaires were distributed to the targeted respondents. The researchers manually administered self-designed questionnaires to collect data, as most of the targeted financial firms are based in Amman, the capital city. The data collection process yielded 162 valid responses, corresponding to a 54% response rate. This sample size is considered adequate for partial least squares structural equation modeling analysis, as the method is known for achieving high statistical power even with relatively small samples (Al-Okaily *et al.*, 2024; Al-Okaily, 2025a, 2025b, 2025c, 2025d, 2025e; Alazmi, 2024). The demographic characteristics indicate that the sample is well represented. A majority of respondents were male (76.5%), with the largest age group (48.7%) falling between 30 and 40 years old. Additionally, 53% of participants held at least a bachelor's degree. Nearly half of the respondents (47.5%) were financial managers occupying functional positions, and 48.7% reported having between 5 and 10 years of professional experience. In terms of organizational profile, most firms (51.8%) reported annual revenues between $100m and $250m, while the majority (70.9%) had an employee headcount ranging from 250 to 350 employees.

### *4.4 Common method bias*

The use of self-administered and self-reported questionnaires for data collection may raise concerns because of the potential presence of common method bias or variance (CMB). A higher chance of CMB occurs when both the dependent and independent variables are collected using the same questionnaire, which could affect how valid and reliable the constructs are (Al-Okaily *et al.*, 2025; Alazmi and Alemtairy, 2024). CMB is the difference in results caused by how the data is collected instead of the actual concepts being measured, and it can happen because of things like how the survey is set up or people wanting to give favorable answers. To mitigate this risk, prior studies emphasize the importance of ensuring

that data are free from CMB before assessing the reliability and validity of the measurement model (Al-Okaily and Al-Okaily, 2024). Following these recommendations, our study adopted several procedural and statistical remedies to minimize potential bias. First, our questionnaire was carefully designed with clear, concise items adapted from validated measures in prior research. Second, respondents were assured anonymity and confidentiality to reduce social desirability bias and evaluation apprehension. Finally, Harman's single-factor test was used to verify CMB. Podsakoff *et al.* (2003) pointed out that CMB is indicated when a single factor accounts for more than 50% of the total variance; in our analysis, the first factor explained less than this threshold. Thus, CMB was not considered a concern in validating our findings.

## 5. Empirical validation

The empirical validation of the proposed model and hypotheses was done with SmartPLS 4 software analysis. Partial least squares structural equation modeling is widely used as data analysis approach in information technology research because of its capability to generate reliable and robust results, particularly when dealing with complex models such as the one in this study (Al-Okaily, 2024a, 2024b, 2025a, 2025b, 2025c, 2025d, 2025e; Alazmi, 2025). In this research, SmartPLS 4 was used to analyze data and test the proposed model in two stages: first, the measurement model was assessed, followed by an assessment of the structural model.

### *5.1 Measurement model analysis*

The measurement model was first assessed to ensure the validity and reliability of the research model constructs. The standard procedure for assessing a measurement model involves examining both convergent validity and discriminant validity. Convergent validity was first assessed through factor loadings of the indicators, composite reliability, Cronbach's alpha and average variance extracted (AVE) to ensure the adequacy of the measurement model. As illustrated in Figure 1, all indicators in this study exhibit factor loadings exceeding the recommended threshold of 0.70. In addition, the composite reliability values range from 0.857 to 0.917, surpassing the acceptable benchmark of 0.70. Similarly, Cronbach's alpha values range from 0.847 to 0.916, also above the recommended minimum of 0.70. Furthermore, the AVE values range from 0.685 to 0.800, exceeding the acceptable threshold of 0.50. Therefore, all constructs satisfy the established criteria for convergent validity, as illustrated in Table 1. On the other hand, we checked if the constructs were truly different from each other by using both Fornell and Larcker's (1981) method and the Heterotrait–Monotrait (HTMT) ratio of correlations. Discriminant validity reflects the extent to which a construct is truly distinct from other constructs, ensuring that it captures phenomena not represented by other variables (Hair *et al.*, 2020). To establish discriminant validity, the Fornell–Larcker criterion was first examined. As presented in Table 2, the square roots of the AVEs for each construct exceed the corresponding inter-construct correlations, satisfying the recommended standard. In addition, HTMT ratios were assessed, and the results (Table 3) indicate that all HTMT values are below the threshold of 0.90. Furthermore, the bootstrapped confidence intervals for the HTMT values do not include 1.0, further supporting construct distinctiveness (Henseler *et al.*, 2015). Thus, discriminant validity is confirmed based on the findings from both approaches.

### *5.2 Structural model analysis*

The structural model was subsequently assessed to examine the proposed research hypotheses. Collinearity among the latent variables was evaluated using variance inflation factors. The variance inflation factor values ranged from 1.000 to 2.085, all of which fell below the

**Table 1.** Reliability and convergent validity

| Construct | Cronbach's alpha | Composite reliability | Average variance extracted (AVE) |
|---|---|---|---|
| Digital orientation (DO) | 0.847 | 0.862 | 0.685 |
| Digital capability (DC) | 0.851 | 0.857 | 0.692 |
| Absorptive capacity (AC) | 0.873 | 0.910 | 0.723 |
| Digital transformation (DT) | 0.916 | 0.917 | 0.800 |
| Financial innovation (FI) | 0.877 | 0.886 | 0.731 |
| Firm resilience (FR) | 0.897 | 0.905 | 0.763 |

**Source(s)**: Table by authors

**Table 2.** Discriminant validity – Fornell and Larcker criterion

| Construct | (AC) | (DC) | (DO) | (DT) | (FI) | (FR) |
|---|---|---|---|---|---|---|
| Absorptive capacity (AC) | *0.850* | | | | | |
| Digital capability (DC) | 0.092 | *0.832* | | | | |
| Digital orientation (DO) | 0.057 | 0.720 | *0.828* | | | |
| Digital transformation (DT) | 0.131 | 0.568 | 0.569 | *0.895* | | |
| Financial innovation (FI) | 0.083 | 0.709 | 0.746 | 0.619 | *0.855* | |
| Firm resilience (FR) | 0.092 | 0.641 | 0.772 | 0.728 | 0.728 | *0.874* |

**Source(s)**: Table by authors

**Table 3.** Discriminant validity – Heterotrait–Monotrait ratio

| Construct | (AC) | (DC) | (DO) | (DT) | (FI) | (FR) |
|---|---|---|---|---|---|---|
| Absorptive capacity (AC) | – | | | | | |
| Digital capability (DC) | 0.134 | | | | | |
| Digital orientation (DO) | 0.089 | 0.834 | | | | |
| Digital transformation (DT) | 0.142 | 0.641 | 0.630 | | | |
| Financial innovation (FI) | 0.098 | 0.825 | 0.861 | 0.687 | | |
| Firm resilience (FR) | 0.101 | 0.725 | 0.880 | 0.788 | 0.816 | – |

**Source(s)**: Table by authors

recommended threshold of 3.3. Therefore, collinearity is not expected to have any impact on the outcomes of the structural model. Furthermore, we evaluated the model's predictive power using the coefficient of determination ($R^2$). According to Hair *et al.* (2020), $R^2$ values of 0.25, 0.50 and 0.75 indicate weak, moderate and substantial explanatory power, respectively. The results show that digital transformation, financial innovation and firm resilience account for 38.2%, 38.3% and 65.4% of the variance, respectively (Figure 2). In addition, we assessed the model's predictive relevance ($Q^2$) to determine whether it possesses predictive capability. Table 4 shows that the $Q^2$ values for digital transformation, financial innovation and firm resilience were 0.346, 0.435 and 0.464, respectively, which confirms that the structural model can make accurate predictions. The bootstrap analysis indicated that five of the six proposed hypotheses received empirical validation, as shown in Figure 2 and Table 5. The data analysis showed that digital orientation (*H1:* $t = 3.211$; $p = 0.001$) and digital capability (*H2:* $t = 3.224$; $p = 0.001$) have a strong and important impact on

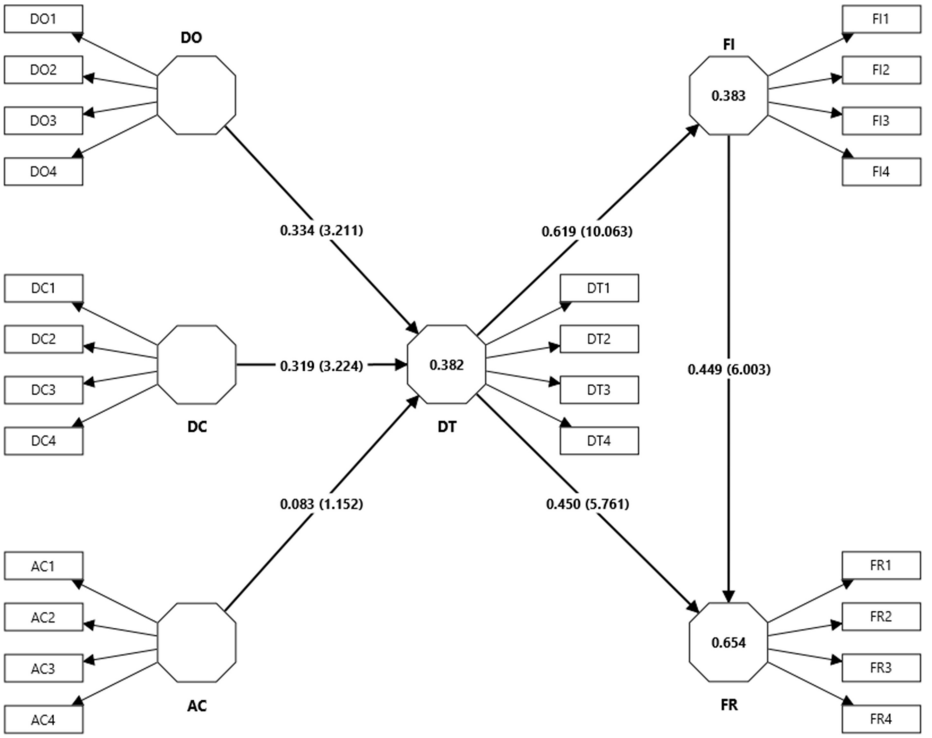


**Figure 2.** Structural model
**Source:** Figure by authors

**Table 4.** Predictive power

| Construct | $Q^2$ predict |
|---|---|
| Digital transformation | 0.346 |
| Financial innovation | 0.435 |
| Firm resilience | 0.464 |

**Source(s)**: Table by authors

digital transformation, but absorptive capacity does not have this effect (*H3:* $t = 1.152$; $p = 0.125$). The findings indicate that digital transformation has a positive and substantial effect on both financial innovation (*H4:* $t = 10.063$; $p = 0.000$) and firm resilience (*H5:* $t = 5.761$; $p = 0.000$). Finally, our findings indicated a positive and significant relationship between financial innovation and firm resilience (*H6:* $t = 6.003$; $p = 0.000$). In conclusion, our findings indicate that *H1*, *H2*, *H4*, *H5* and *H6* obtained empirical and statistical validation, whereas *H3* did not, according to our research data.

**Table 5.** Structural model estimation

| No. | Hypothesized path | VIF | $\beta$ value | *t*-value | *p*-value | Remarks |
|---|---|---|---|---|---|---|
| *H1* | DO → DT | 2.074 | 0.334 | 3.211 | 0.001 | Supported |
| *H2* | DC → DT | 2.085 | 0.319 | 3.224 | 0.001 | Supported |
| *H3* | AC → FI | 1.009 | 0.083 | 1.152 | 0.125 | Not supported |
| *H4* | DT → FI | 1.000 | 0.619 | 10.063 | 0.000 | Supported |
| *H5* | DT → FR | 1.621 | 0.450 | 5.761 | 0.000 | Supported |
| *H6* | FI → FR | 1.621 | 0.449 | 6.003 | 0.000 | Supported |

**Note(s):** *$p < 0.05$; **$p < 0.01$; and ***$p < 0.001$
**Source(s)**: Table by authors

## 6. Discussion and implications

### *6.1 Main findings*

The results revealed that digital orientation significantly supports digital transformation, which supports *H1* ($\beta = 0.334$ and $p < 0.01$). This empirical result aligns with past empirical research conducted in digital transformation contexts (Barba-Sánchez *et al.*, 2024; Shee and Kaswi, 2023). A strong digital orientation enables financial institutions to proactively scan for emerging digital trends, invest in innovative platforms and integrate advanced technologies into their core processes. This strategic orientation fosters a culture that prioritizes digital initiatives, which in turn accelerates transformation across operations, customer engagement and product development. Likewise, our empirical results confirm that *H2* is supported, indicating that digital capability positively influences digital transformation ($\beta = 0.319$ and $p < 0.01$). This finding aligns with the technological innovation research done by Prakasa and Jumani (2024), Mai *et al.* (2024) and Zhang *et al.* (2024). This indicates that digital capability empowers financial firms to modernize older systems, enhance operational efficiency and create creative digital products and services by acquiring, integrating and deploying digital technology. Financial firms frequently manage intricate procedures, extensive data and stringent compliance mandates; thus, robust digital competencies enable them to leverage advanced technologies. These capabilities facilitate the reconfiguration of business innovation models, improve consumer experiences via integrated digital channels and guarantee resilience in a competitive and regulated landscape. Hance, financial firms possessing superior digital capabilities are more adept at initiating and maintaining successful digital transformation efforts.

In contrast, *H3* lacked statistical support ($\beta = 0.083$, $p > 0.05$), suggesting that absorptive capacity did not have a significant correlation with digital transformation. This finding contrasts with previous literature on technological innovation (Ngo *et al.*, 2023; Tran *et al.*, 2022; Malik *et al.*, 2024), which has indicated that absorptive capacity significantly influences digital transformation. A plausible rationale for this lack of support is that many financial institutions can learn and use outside knowledge, but this does not lead to real digital change unless they also have clear goals, effective technology and a supportive digital culture. Financial firms often operate within heavily regulated frameworks and rely on outdated technologies, which can hinder the transformation of acquired knowledge into tangible digital initiatives. Additionally, merely gathering knowledge is insufficient; companies require strong skills to translate ideas into action, effective teamwork between departments and support from top management and policymakers to translate insights into groundbreaking digital projects. Moreover, firms may face regulatory rigidity, organizational inertia or other contextual barriers that weaken the role of absorptive capacity in facilitating

digital initiatives. These factors may restrict the effective application of acquired knowledge, thereby diminishing its impact on digital transformation. In this situation, absorptive aptitude alone may not have a direct or substantial impact on digital transformation.

The research findings reveal that digital transformation has a positive and significant impact on both financial innovation ($\beta = 0.619$ and $p < 0.001$) and firm resilience ($\beta = 0.450$ and $p < 0.001$), thereby providing empirical support for *H4* and *H5*. These results are consistent with prior studies that have also identified the positive effects of digital transformation on innovation and firm resilience (Yang *et al.*, 2025; Hu *et al.*, 2024; Shah *et al.*, 2024; Putritamara *et al.*, 2023; Tran *et al.*, 2022; Zhang *et al.*, 2024). This implies that financial firms investing in digital technologies and capabilities are more likely to generate innovative financial products, services and processes, which in turn enhance their ability to withstand market volatility and operational disruptions. Financial firms that aggressively pursue digital transformation by adopting cutting-edge technology and automation are more inclined to launch new financial products, services and processes. Digital initiatives allow firms to improve operational efficiency and quickly adapt to evolving market demands, increase their capacity to predict client requirements and provide customized financial solutions, enabling them to adapt to dynamic business landscapes. Furthermore, firms that invest in digital technology enhance their flexibility and adaptability, allowing for expedited decision-making, effective disruption management and sustained operations amid market fluctuations. Therefore, digital transformation fosters ongoing learning and innovation, enabling companies to anticipate risks and recover effectively from challenges.

Finally, our study confirms the positive impact of financial innovation on firm resilience; thus, *H6* was empirically supported ($\beta = 0.449$ and $p < 0.001$). Hussain and Papastathopoulos (2022) also found a similar relationship between financial innovation and resilience. It can be concluded that financial innovations, including the creation of novel financial products and the introduction of digital services, boost financial firms' ability to respond effectively to market shocks, disruptions and regulatory changes. This connection is particularly important for financial firms, which operate in highly dynamic, competitive and risk-laden environments. In financial firms, financial innovation enhances resilience by diversifying revenue streams, improving risk management and enabling greater agility in responding to market and regulatory changes. This adaptability and strengthened operational stability help firms withstand shocks and sustain performance.

### *6.2 Theoretical implications*

A key novel contribution of this research lies in the proposition and empirical validation of a comprehensive theoretical model that elucidates how digital transformation drives financial innovation and, in turn, enhances financial resilience in Jordan's financial market. The validation of this model opens fresh perspectives on the mechanisms through which financial firms can navigate uncertainty and adapt to rapidly changing technological and economic environments. Thus, our study addresses a significant gap in the literature by providing context-specific empirical evidence from Jordan as an emerging market that has been relatively underexplored in prior research. The current research also extends the RBV and DCV within the context of financial digital transformation. Theoretically, RBV underscores the importance of resources that are valuable, rare, inimitable and non-substitutable in enabling firms to achieve and sustain competitive advantage. In parallel, DCV emphasizes a firm capacity to integrate, build and reconfigure internal and external competencies in response to rapidly changing environments. Building on this, our study offers a deeper understanding of how financial firms in developing economies can leverage digital resources and capabilities to enhance financial innovation and firm resilience. Furthermore, it deepens

our understanding of how digital orientation, digital capability and absorptive capacity influence digital transformation, particularly within the financial market. By empirically testing the impact of these key enablers on digital transformation, our research provides robust evidence supporting the transformative role of digital initiatives in fostering financial innovation and enhancing firm resilience. This study also fills a gap in literature by specifically examining how digital transformation influences financial innovation, an area often overlooked in favor of broader digital innovation research. This focus underscores the study's novelty and enhances its theoretical relevance by providing statistical evidence that supports the direct impact of digital transformation on financial innovation. Finally, our research provides theoretical insights into how financial innovation enhances firm resilience as an area that remains insufficiently explored in existing literature. The findings not only affirm this link but also address a critical gap in the scholarly discourse, particularly within the context of developing financial markets. In conclusion, our current research effort provides theoretical insights by integrating the RBV and DCV to significantly enhance the understanding of the complex interactions among digital orientation, digital capability, absorptive capacity, digital transformation, financial innovation and firm resilience.

### *6.3 Practical implications*

The research findings offer valuable insights for managers and policymakers in financial firms. This research confirms that both digital orientation and digital capability exert a positive influence on digital transformation. In practice, financial firms should actively implement digital transformation strategies by focusing on enhancing digital orientation and capability. This includes strengthening the development and application of key technologies, promoting the deep integration of digital tools into core operational processes and elevating the quality of digital management, services and decision-making. These measures collectively contribute to sustainable and high-quality organizational development. Managers should prioritize building and reinforcing digital capabilities within their organizations. This entails investing in advanced technologies such as artificial intelligence, blockchain and big data analytics to enhance decision-making, improve operational efficiency and design innovative financial products and services tailored to evolving customer demands. Furthermore, cultivating digital orientation across all levels of the organization is crucial. Establishing a clear digital vision and fostering a culture of agility, experimentation and continuous learning are essential to successful transformation. Managers must also ensure that employees are equipped with appropriate training and tools to adapt to ongoing digital changes and embrace a forward-thinking mindset. Together, these efforts can empower financial firms to execute effective digital transformation and strengthen their resilience in an increasingly dynamic and competitive environment. The confirmation that digital transformation positively influences financial innovation and firm resilience highlights the strategic importance of embracing digital technologies in financial firms. Managers should actively invest in and adopt advanced digital technologies to not only streamline operations but also drive the development of innovative financial products and services. This investment enables firms to enhance adaptability, improve risk management and respond more effectively to market disruptions. In addition, fostering a digital culture and upskilling employees in digital competencies can further strengthen the organization's ability to innovate and maintain long-term resilience in a rapidly evolving financial landscape. Finally, financial firms should prioritize financial innovation as a strategic tool to enhance resilience. By developing new products, leveraging digital technologies and fostering a culture of innovation, firms can better adapt to market changes, withstand external shocks and ensure long-term sustainability. Financial managers in emerging markets should

strategically invest in digital infrastructures to enhance efficiency, trust and transparency. Sector-specific strategies, such as adopting blockchain for secure transactions and using big data analytics for customer-focused innovation, can strengthen competitiveness and support sustainable growth.

## 7. Conclusion

This research proposed and empirically validated a theoretical model that deepens the understanding of how digital transformation drives financial innovation to enhance financial resilience within Jordan's financial sector. The validated model provides novel insights into the mechanisms through which financial firms can navigate uncertainty and adapt to rapidly evolving technological and economic landscapes. Importantly, our research addresses a significant gap in the literature by offering context-specific empirical evidence from an emerging market such as Jordan which remains underrepresented in prior empirical studies. Therefore, our current study not only contributes to theoretical advancement but also offers actionable insights for policymakers and practitioners aiming to bolster financial firms' resilience through digital transformation and financial innovation. Despite its contribution, several limitations of the current research should be acknowledged. First, given the continuous and evolving nature of digital transformation in the financial industry, the reliance on cross-sectional data limits our understanding of how digital and opportunity capabilities develop over time. Future research should consider a longitudinal approach to gain deeper and more comprehensive insights into these dynamic processes. Second, our sample was limited to the financial market in Jordan, which may constrain the generalizability of the findings to other contexts. Variations in industry structures, cultural norms and market environments could affect the nature and strength of the observed relationships. Future research that includes firms from diverse industries and regions would enhance the generalizability of the results and offer a more comprehensive understanding of the impact of digital transformation on financial innovation and firm resilience. In addition, comparative studies should be undertaken to investigate differences across industries and countries. Third, our research used non-probability purposive sampling, which limits the generalizability of the results. Future research should use probability-based sampling techniques to enhance representativeness and improve the robustness of findings. Finally, this study focused on key digital enablers such as digital orientation and digital capability. This presents opportunities for future research to incorporate additional technology-related dimensions, such as digital culture and digital leadership. Further investigations might also explore other organizational and environmental factors that drive digital transformation, offering a more holistic understanding of how financial firms can enhance financial innovation and resilience in the digital era.

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**Appendix. Measures**

*Digital orientation*

DO1: We are committed to use digital technologies in developing new solutions.

DO2: Our solutions leverage superior digital technology.

DO3: New digital technology is readily accepted in our organization.

DO4: We always look out for opportunities to use digital technology in our innovation.

*Digital capability*

DC1: Our firm acquires important digital technologies.

DC2: Our firm identifies new digital opportunities.

DC3: Our firm responds to digital transformation.

DC4: Our firm develops innovative products and services using digital technology.

*Absorptive capacity*

DA1. Our management supports the development of prototypes.

DA2. Our firm regularly considers technologies and adapts them in accordance with new knowledge.

DA3. Our firm has the ability to work more effectively by adopting new technologies.

DA4. Our employees successfully link existing knowledge with new insights.

*Digital transformation*

DT1: Our firm aims to digitalize everything that can be digitalized.

DT2: Our firm operates business processes based on digital technology.

DT3: Our firm is integrating digital technology to change our business processes.

DT4: The business operation of firms is changing toward the use of digital technology.

*Financial innovation*

FI1: Our financial solutions are of higher quality than those of its competitors.

FI2: Our financial solutions have better features than those of their competitors.

FI3: Our new financial solutions are improvements upon existing products.
FI4: Our new financial solutions are novel to the market at launch.

*Firm resilience*
FR1: Our firm could take advantage of opportunities quickly.
FR2: Our firm could rapidly implement decisions to face market changes.
FR3: Our firm can quickly take action and respond to crises.
FR4: Our firm continues to move forward and maintain market positioning.
*Source(s):* Table by authors

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