FINTECH GOVERNANCE AND FIRMS' PERFORMANCE: DOES FINANCIAL LITERACY MATTER?

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Abstract

Through harnessing innovative technologies, financial technology (FinTech) services streamline and organize access to capital, improve operational effectiveness, and facilitate various transactions, enabling small and medium-sized enterprises (SMEs) to thrive in competitive and complex economies. The purpose of this research is to examine whether financial literacy (FL) moderate the relationship between FinTech indicators and SMEs' performance in the Jordanian context. SMEs' performance was measured by the operational and financial indicators. While the Fintech indicators were: financial inclusion (FI), trust in FinTech (TF), alternative payment methods (APMs), and perceived risk (PR). Data have been collected using a developed questionnaire. The study's population was the SMEs in Jordan. Utilizing structural equation modeling (SEM) to analyse the collected 172 questionnaires, the results revealed that FinTech indicators have a significantly positive effect on SMEs' performance. FL moderates the relationship of FinTech indicators with SMEs' performance. The current study contributes to the existing research regarding the FinTech, FL and SMEs' performance. The current research contributed to the literature by examining new variables, namely, FI, APMs, TF, and PR. The outcomes of this study highlight the importance of FinTech services in enhancing SMEs' performance. Such outcomes indicate that SMEs in Jordan are strongly benefiting from FL and FinTech indicators.

Keywords: FinTech, SMEs' performance, Financial Literacy, Financial Inclusion, Trust in FinTech, Perceived Risk

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1. INTRODUCTION

In the last two decades, financial markets have seen a revolution in the technology world, which has changed financial activities and production processes. Financial technology (FinTech) strives to automate and enhance various financial services (Chhaidar et al., 2023). FinTech is seen as a new area of finance and is becoming more and more significant in the field, as well as in policy and activities. Many people believe that the new FinTech is making it possible for the financial sector to change (Siddiqui & Rivera, 2022; AlHares & AlBaker, 2023; AlBaker, 2024; Langi et al., 2024; Karkkainen, 2021).

A paradigm shift in the commercial and financial fields is presented by FinTech. According to the literature, FinTech is a dynamic term that is changing as more tech entrepreneurs enter

the market and adapt it to meet societal demands. A financial service that leverages cutting-edge technologies to address the fundamental demands of the future is known as FinTech (Lontchi et al., 2023). In a study by Tarazi (2023) in Jordan, the results suggest that there is a reduction in the degree of access to financial services, which is demonstrated by the low levels of involvement in the country's financial system. The Jordanian economy as a whole and the other sectors in particular suffer greatly from this low level of participation. FinTech is one of the key elements influencing the degree of participation in the Jordanian financial system. Furthermore, according to Kaddumi et al. (2023), Jordan's banking industry offers a range of financial lending options to consumers and various industrial sectors, all of which are exposed to varying risks.

Since financial services are the sector most directly associated with the global financial crisis (GFC) and are central to the concept of FinTech, special attention is given to them (Hayes, 2021). Due to developments in the technology, research on the FinTech has also become a hot topic. All firms need to learn what risks affect their operations and performance, and how to manage such risks effectively (Zhao, 2021). Investment activities in FinTech have grown to be a multibillion-dollar business (Ladagu, 2021). Thus, the current study has a significant contribution to the existing debate on whether FinTech can help enhance enterprises' performance, especially small and medium-sized enterprises (SMEs) performance, due to its role in improving the performance, if it is used sensibly (Lukas, 2020). In this way, this research contributes to the growing literature of knowledge on FinTech.

Thus, according to the significance of these issues (FinTech and performance of the SMEs), the main purpose of this research is to examine the association between FinTech indicators, SMEs' performance, and financial literacy (FL). Through the structural equation modeling (SEM) to the analysis of the collected data of Jordanian SMEs, outcomes indicate that FinTech indicators — financial inclusion (FI), trust in FinTech (TF), alternative payment methods (APMs), and perceived risk (PR) — possess a positive influence on the SMEs performance.

Jordan was affected globally by the GFC. This suggests that issues facing the financial sector in industrialized nations can have a big impact on the actual economy of a developing nation like Jordan (Qawqzeh et al., 2021; Alrwashdeh, 2021). To protect the financial systems and to guarantee the ongoing expansion and advancement of the world economy, a number of cautious and deliberate steps were being taken. It is acknowledged that the business cycle is significantly affected by the performance of SMEs (Ooi et al., 2023).

In addition, due to a lack of clear government regulations and standards controlling the relationship between shareholders (owners, investors) and executive managers (internal management) in a firm, there have been several cases of scandals and ineffective accounting performance worldwide. Weak government mechanisms reinforce the greed of the dominant and influential groups within the various companies. As a result, the various businesses perform worse overall and are unable to make enough money to pay their shareholders. They are also less able to draw in new investors and persuade existing ones to put money into the company (Bshayreh et al., 2024). Most studies on the variables influencing business performance have been carried out in industrialized nations. In the Middle East, particularly in Jordan, there are comparatively fewer studies (Rammadan, 2020; Naz et al., 2024). In this regard, FinTech possesses the ability to enhance the growth and productivity of SMEs, and it has emerged to enhance FI in developing countries (Khalaf & Wadi, 2023). Therefore, to support SMEs to contribute the inclusive growth, an urgent need to emphasize the SMEs' role and their performance (Lukonga, 2021).

FinTech is considered as a combination of financial activities with the technology in a way that allows performing several transactions without the need to possess a bank account. However, adopting such mechanisms and features may create several obstacles for some enterprises that are not willing to accept these changes in the business economy. The FL and FinTech have the ability to help all related parties enhance their performance and save time. In addition, the adoption of FL and FinTech also involves its own challenges (Ananda et al., 2023).

Jordan's economy was not shielded from the severity of economic and financial shocks because it was a developing nation vulnerable to global shocks. Since 2007, Jordan has seen a number of shocks, such as the Arab Spring and the GFC. Additionally, it significantly slowed down the domestic economy. Following these crises, a strict fiscal policy was imposed, and the Central Bank of Jordan (CBJ) implemented a conservative monetary policy, which included multiple interest rate reductions from 2007 to 2010. In certain respects, it supported price stability, reserve levels, and growth levels by preserving monetary and economic stability. However, the evidence suggests the need to improve and support the businesses in Jordan, particularly the SMEs (Lukonga, 2020; Alrwashdeh, 2021).

The CBJ has a significant role in promoting the FI function and creating standardized frameworks (Baker et al., 2023). Consequently, the various enterprises — especially SMEs — can benefit from such promotion, enhance the FI, and then enhance their performance (Kaddumi et al., 2023).

Due to the fact that SMEs can adapt to FinTech services faster than large enterprises (Dos Santos & Peffers, 1995), this research attempts to provide a wide explanation of the association between FinTech indicators and SMEs' performance, and role of FL in this association.

Investigating the influence of FinTech indicators on the SMEs' performance in developing economies is critical for understanding how the various digital innovations have the ability to contribute the economic growth in general, and to empower the local enterprises in particular (Lukonga, 2021; Lontchi et al., 2023). The current research not only highlights the potential of FinTech indicators to enhance the SMEs' performance, but it also underscores the significance of FL in increasing these advantages for long-term success. Previous studies on the FinTech, such as Mainardes et al. (2022), Baker et al. (2023), and Lontchi et al. (2023) have been focused their attention on utilizing the most popular measures of FinTech indicators, due to unavailability of the information on FinTech. Limited measurements have been adopted, for instance; self-reported information and survey reports. Consequently, according to the shortcomings in the existing studies, this research seeks to bridge this gap by examining the potential relationship between FinTech indicators, namely, FI, APMs, TF, and PR, and SMEs' performance, and the function of FL in

this relationship among the Jordanian SMEs. Given that the developing markets, like Jordan, have been ignored from prior empirical research.

As a matter of fact, Jordan is considered an attractive setting to conduct such an investigation, since Jordan is considered as bridge of the new investments, technologies, and activities of the business in the Middle East region, on the other hand, the stockholders' legal protection remains weak (Qawqzeh, 2023). Despite the increased research on such topics, a major gap still exists in the research about the particular indicators by which FinTech promotes SME performance. Accordingly, this research pursues to contribute to the existing research in two ways:

1) This research explores the association of FinTech indicators with SMEs' performance in Jordan.

2) Investigates whether the FL could become a source of improving the impact of FinTech indicators on SMEs' performance.

The research developed two questions to address the research's objectives, and they are associated with the developed hypotheses, hence the questions are as below:

1) *RQ1* is associated with the effect of FinTech indicators (FI, APMs, TF, and PR) on SMEs' performance.

2) *RQ2* is associated with the moderation influence of FL on the FinTech indicators — SMEs' performance relationship.

The FinTech indicators in this study are represented by: FI, APMs, TF, and PR. The developed research questions are as follows:

RQ1: Do FinTech indicators affect small and medium-sized enterprises' performance?

RQ2: Does FL moderate the FinTech indicators — small and medium-sized enterprises' performance relationship?

The rest of the current research is structured as follows. Section 2 shows the literature review associated with the performance of the firms, FinTech, FL, as well as hypotheses development. Section 3 contains the design of the research, namely, descriptions of data, the study's population, sample of the study, and measurement of the study's variables. Section 4 discusses the study findings. Finally, Section 5 presents the conclusions and recommendations for future insights.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This Section introduces the literature review regarding the main topics of this study, involving the general issues of SMEs' performance, FinTech, and FL, the underlying theory, namely, resource-based theory (RBV), and hypotheses development, as well as the research framework.

2.1. Firms' performance

The financial manipulations, the conflicts of interests in organizations, the weak of the internal control systems, the managerial recklessness and greed, the ethical dilemmas and corporate dishonesty, the fraudulent activities by the management (Jannah et al., 2023), the manipulation of the part of the auditors and several fraudulent activities were some of the reasons that led to companies' failure and created a negative image in front of the users and public about quality of firms' outcomes, firms performance and the companies' statements quality (Qawqzeh, 2021). The multifaceted nature of the business environment and the continued challenges in this environment lead to additional challenges within the firms' context. In addition, organizations' performance is affected by the digitization of the business, the serious potential of the Web, and the ramifications of big data (Ul-Huq et al., 2020).

Adopting the FinTech services face a noticeable risk as the various firms change the methods, they address their activities (Hassan & Misrina, 2021; Feyen et al., 2021; Lusweti et al., 2024). On the other hand, addressing risk in FinTech is an important subject in the areas of accounting and economy. Due to technological advancements, research on FinTech and its association with enterprises' performance has also become a hot topic. The different companies have to figure out what risks influence their performance, and how to address such risks (Zhao, 2021).

The significant growth of FinTech services is highly affecting the recent trends regarding measuring performance of the SMEs, given that FinTech services have revolutionized how firms track and enhance their operations. The interaction between performance measurement and the FinTech indicators not only improves effectiveness but also helps SMEs to grow and prosper in an increasingly tech-savvy environment (Tariq, 2025).

According to the literature, performance measurement is a difficult concept since it reveals whether or not the firm is on the proper course (Shuaib & He, 2021; Cezarino et al., 2023). To remain competitive, the various enterprises must evaluate their performance on a regular basis. Several studies have shown several performance indicators based on their criteria (Yadav & Tripathi, 2014; Thanki et al., 2016). Similarly, financial services rules, credit facility and management policies, and marketing management policies are all important in improving corporate performance (Aremu & Adeyemi, 2011; Anand, 2015; Udeagha & Muchapondwa, 2023). According to Amrina and Yusof (2011), the most widely utilized measures to analyse business performance are quality, cost, delivery, and flexibility. Furthermore, performance assessment takes into account earnings, productivity, and the market opinions of company shareholders about the applicability of metrics (Mjongwana & Kamala, 2018).

Various studies provided a common technique to measure performance by examining the effectiveness of an organization in achieving its goals through the efficient and effective gaining of resources. As a result, both financial and non-financial proxies can be employed as indicators of SMEs' performance. Moreover, data indicates that firm success is characterized by the development of quantitative proxies that could be consistently monitored to measure the achievement progress of pre-set goals (Alshebami & Aldhyani, 2022; Małys, 2023).

Alimirruchi and Kiswara (2017) examined the relationship between a company's performance with FinTech. The findings showed that the performance is significantly affected by FinTech. In addition, Dhiaf et al. (2022) investigate the relationship between FinTech in the firm's efficiency and performance. They revealed that FinTech is directly associated with market performance. Thus, according to reviewing the literature and evidence from prior studies, financial and operational indicators will be used in this study to measure the SMEs' performance.

2.2. Financial literacy

It has been demonstrated that FL significantly affects a company's ability to succeed. However, it is still unclear exactly how FL affects SMEs' performance (Tuffour et al., 2022), thus this justifies the need for the current study. Menike (2018) examined the relationship between FL and the firms' performance in Sri Lanka. Results reveal that financial knowledge, financial influence, as well as financial behaviour have a positive influence on the firms' performance, whereas financial positions do not have any impact on the firm's performance. Usama and Yusoff (2019) revealed that FL has a significant impact on performance of the entrepreneurs. Lontchi et al. (2023) found that the FL is considered as an important tool through which the FinTech indicators affect the SMEs' performance (finance and operation). They provided a good explanation of how the various SMEs can enhance their performance by adopting FinTech solutions and FL.

Tuffour et al. (2022) found that there is a significant association between FL and enterprise performance. All of the FL components, namely, awareness, attitude, and knowledge, possess a significantly positive impact on the enterprise's performance. Ananda et al. (2023) found that FL and FinTech have a significant function in enhancing performance by maximizing operational efficiency. RBV indicates that a firm's resources such as FL can be utilized as a source of competitive advantage if it is heterogeneous, immovable, and meets the requirements of value rareness, faulty imitability, and non-substitutability (Usama & Yusoff, 2019). Mutlu and Özer (2022) revealed that FL has a significantly moderating role in the internal control-financial behaviour relationship.

2.3. Financial technology

One of the sectors most affected by advancements in information and communication technology is the financial industry. The previous research on FinTech has primarily focused on the desire to adopt its services. FinTech currently has a large enough client base to support user satisfaction research (Mainardes et al., 2022). FinTech services and SMEs' performance have recently garnered considerable traction worldwide. Adopting FinTech services and utilizing important organizational resources are critical to the survival, success, and performance of the various firms (Siddik et al., 2023).

There is a dearth of primary data-based studies regarding the subjects of FinTech, FL, and firms' performance (Siddik et al., 2023), particularly the SMEs' performance. Thus, the current study will address the existing gaps in the undiscovered topics, namely, FinTech indicators, FL, and SMEs' performance, and will yield important implications for the theory and the practice. This study will provide important results and a deductive model for focusing the FinTech and FL for the managers, SMEs, as well as policymakers, to improve SMEs' performance. Agboola et al. (2023) indicate that there is a significant association of FinTech lending with the survival and revenues of the firms. The results of their study support predictions of the technology acceptance theory, which is strongly relevant to the FinTech.

Various previous studies have been conducted regarding these topics. Siddik et al. (2023) found that FinTech and FL are important drivers of performance. They concluded that access to finance has a strong mediating influence on the relationships of FinTech, FL with sustainability performance. Rahadjeng et al. (2023) revealed that FinTech possesses a significant effect on the companies' performance, the FI and the self-efficacy. Similarly, FI has a mediating effect on the FinTech companies' performance relationship. They found a significant impact of FL on self-efficacy, while FI does not mediate the FL-performance relationship. Chhaidar et al. (2023) evince that FinTech has a significantly positive association with a firm's profitability. Baker et al. (2023) found that FinTech indicators (FI, APMs, automation) significantly and positively affect firms' performance.

According to Mainardes et al. (2022), customer innovativeness, perceived usefulness (PU), and trust in FinTech activities all have an impact on their satisfaction. In addition, they found that there would be a higher chance of achieving customer satisfaction if FinTech services were helpful, dependable, and used by clients who were receptive to new ideas. Ye et al. (2023) revealed that FinTech effectively leads to an enhanced quality level of economic growth, but the association of FinTech with the green total factor productivity was found to be unbalanced.

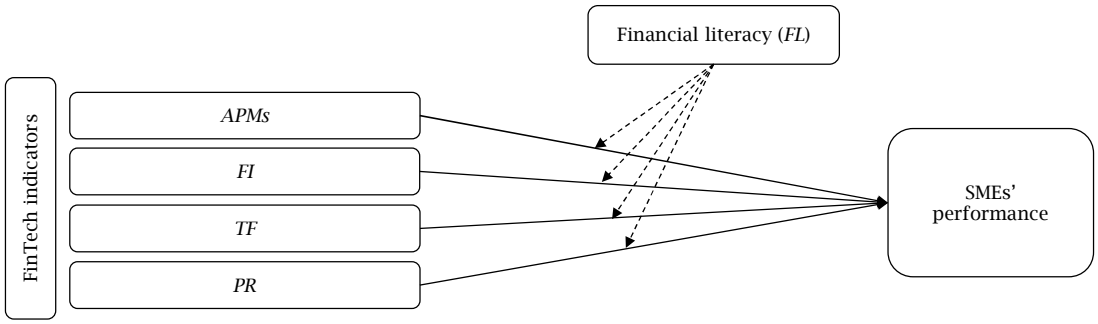
Similarly, Thanki et al. (2016) examined the effect of adopting digital technology on a company's performance, and the role of digital transformation and innovation as mediating variables. They revealed that digital technology has a positive impact on the transformation activities and innovation of the company, and affects firms' performance. In addition, Purwantini and Anisa (2018) show that utilizing information technology positively affects SMEs' performance, particularly the consumer service and marketing activities. Regarding the theory, the current study draws upon the RBV to examine the influence of the FinTech and the FL on the SMEs' performance. In this regard, RBV indicates that the firms can employ and use FinTech and FL as valuable and significant resources for SMEs to improve their performance (Siddik et al., 2023). Furthermore, in line with the RBV (Eniola & Entebang, 2017), the results of this study will highlight the importance of the FL in providing financial resources to improve SMEs' performance. Accordingly, the following hypotheses have been drawn:

H1: FinTech indicators (FI, APMs, TF, and PR) have a significantly positive effect on small and medium-sized enterprises' performance.

H2: FL moderates the relationship between FinTech and small and medium-sized enterprises' performance.

Figure 1 shows the research framework. As it's shown, FinTech indicators reflect the independence variables, FL reflects the moderating variable, while SMEs' performance reflects the dependent variable.

Figure 1. Research framework



Source: Authors' elaboration.

3. RESEARCH METHODOLOGY

This Section displays the research approach utilized in the current study to test its hypotheses, involving the selected sample, collection of the needed data as well as measurement of the study's variables.

3.1. Data collection, population, and sample

In terms of collecting the data, it was through a developed questionnaire based on reviewing the related studies on the FinTech indicators (FI, APMs, TF, and PR), FL, and SMEs' performance, such as Lontchi et al. (2023), Baker et al. (2023), and Mainardes et al. (2022). The population consists of SMEs in Jordan. The respondents consist of senior managers, middle managers, junior managers, production managers, and innovation managers (any manager familiar with FinTech, FL, and SMEs' performance). Data for the analysis was collected through a developed questionnaire. The authors distributed 212 questionnaires, 184 were returned, and 12 were dropped (81% response rate).

3.2. Measurement of the variables

The main independent/predictive variable in the current research is *FinTech*, which contains a series of sub-independent variables (IVs), namely, *FI, APMs, TF*, and *PR*. These IVs have to be measured deeply and precisely in order to examine the developed hypotheses and achieve meaningful results.

FI reflects that the various users (individuals or companies) possess access to affordable financial products or beneficial financial services that meet customers' needs, for instance, transactions, payment methods, or insurance services, and such activities are delivered in a responsible and sustainable way. *FI* contains five items (various financial services, enhancing economic development, achieving sustainable development, improving the clients' awareness, and assisting people). APMs are cashless payment ways. For instance; payments through credit and debit cards, transfer transactions, electronic wallets, mobile platforms, electronic invoices, as well as cryptocurrencies. *APMs* contain five items (APMs adoption to enhance services' quality, attract new clients' attention, reduce the cost of the service, affecting the efficiency of the company's performance). *TF* contains three items (reliability of the services, achieved promises and commitments, and reliability of e-transactions and e-procedures), and *PR* contains three items (money stealing, personal privacy, and risk of FinTech services).

The dependent variable: *SMEs' performance*, measured by operational indicators (manufacturing costs, defect rate, product development, and new techniques) and financial indicators (sales, operating profit, return on investment (ROI), and logistics). While the *FL* is the moderating variable. The five-point response (Cronbach's alpha) is used in this study which ranges between 1 = highly agree and 5 = highly disagree. The measurement of the study's variables was adapted following Lontchi et al. (2023), Baker et al. (2023), Mainardes et al. (2022), Afshan et al. (2022), Lee (2021), and Rieger (2020). Appendix A shows items of the study's variables.

4. RESEARCH RESULTS

4.1. The heterotrait-monotrait correlation

In order to investigate the models' reliability and validity, Henseler et al. (2009) and Hair et al. (2017) encouraged to examine the correlation between the investigated variables using heterotrait-monotrait (HTMT) examination. This research adopted HTMT to examine the variables' correlation. Accordingly, as indicated in Table 1, values of the HTMT test in this study were found to be less than 0.80 (Henseler et al., 2015; Kline, 2023), indicating that the study's models are acceptable and reliable.

Table 1. HTMT correlation

Variables	*FinTech indicators*	*FL*	*SMEs' performance*
FinTech indicators	1		
FL	0.642	1	
SMEs' performance	0.574	0.746	1

Source: Authors' elaboration.

4.2. Significance of models' paths

In analysing the research models, it is worth checking the predictive precision, accuracy, and reliability of the research model(s). The current research contains two models as follows: Model 1 reflects the effect of FinTech indicators (*FI, APMs, TF*, and *PR*) on *SMEs' performance*. While Model 2 reflects the moderating role of *FL* on the relationship between FinTech indicators and *SMEs' performance*. Therefore, this research employs the R-square to examine the predictive precision, accuracy, and reliability of the models under investigation. Values of R-Square (R^2) of both models are reported in Table 2, where, R^2 of Model 1 was found to be 0.432, reflecting that all of the IVs (FinTech indicators) can explain 43% of the variance in the dependent variable (*SMEs' performance*). R^2 of Model 2 was

found to be 0.481, which can be an indicator that the IVs (FinTech indicators) and the moderating variable (*FL*) together explained 48% of the variance in the SMEs' performance in the Jordanian SMEs.

Table 2. R^2 of the models

Construct	*R^2*
Model 1	
FinTech indicators > SMEs' performance	0.432
Model 2	
FinTech indicators > FL > SMEs' performance	0.481

Source: Authors' elaboration.

4.3. Variance inflation factor and predictive significance (Q^2)

The results of the variance inflation factor (VIF) and predictive significance (Q^2) tests of both models in this study are presented in Table 3, where the results indicate that there are no multicollinearity issues in the models under investigation, given that the VIF values found to be less than 4. In addition, the study's models have a predictive significance, due to the Q^2 results found to be greater than 0, as indicated by Duarte and Raposo (2010).

Table 3. Variance inflation factor and predictive significance (Q^2)

Panel A: Variance inflation factor			
Path		***VIF value***	
FinTech indicators:			
FI		1.032	
APMs		1.063	
TF		1.837	
PR		1.524	
FL		1.846	
Panel B: Q^2 test			
Variable	***SSO***	***SSE***	***Q2 (= 1 – SSE / SSO)***
FinTech indicators	5032	3718.6	0.261
FL	6283	2341.3	0.627

Source: Authors' elaboration.

4.4. Structural equation modelling

Data from the current research were analysed using SEM to examine the study's hypotheses. As mentioned earlier, two models have been developed in the current research. Model 1 reflects the association between FinTech indicators (*FI, APMs, TF*, and *PR*) with *SMEs' performance*. Model 2 reflects the moderation role of the *FL* on the relationship of FinTech indicators (*FI, APMs, TF*, and *PR*) with *SMEs' performance*. Table 4 reveals the findings of the study's models and its hypotheses.

Table 4. Study models path

Model	*Beta value*	*Std. dev.*	*t-statistics*	*p-value*
Model 1				
FinTech > SMEs' performance	0.084	0.031	2.736	0.003
Model 2				
*FinTech * FL > SMEs' performance*	0.076	0.024	3.174	0.002

*Note: FinTech * FL — the interaction variable.*
Source: Authors' elaboration.

4.5. Findings

Regarding Model 1, the findings showed that there is a significantly positive association between FinTech indicators (*FI, APMs, TF*, and *PR*) with *SMEs' performance* (beta value = 0.084, Std. dev. = 0.031, t-statistics = 2.736, and p-value = 0.003). Compared to the results of previous studies, such findings have been reported by various prior studies, such as Mutlu and Özer (2022), Lontchi et al. (2023), Siddik et al. (2023), and Rahadjeng et al. (2023). This result indicates that *H1* is accepted.

Such positive influence of *FI* on performance of the Jordanian SMEs indicates that the various activities, such as banking, various payment methods, and easy access to loans are considered as effective activities in enhancing the SMEs' growth, particularly in the developing economies where some of the banking services might be limited.

The positive influence of *APMs* reflects that SMEs can provide their various clients with additional flexible, effective, and trusted procedures to perform their transactions. This influence can lead to an increase in the SMEs' sales levels, ensuring the satisfaction of their clients, as well as creating a competitive advantage.

Moreover, the positive influence of FinTech on SMEs' performance reflects that the firms that are able to obtain financial activities — through FinTech — tend to improve their performance and sustainability.

But first of all, the various SMEs need to trust in the adopted FinTech services and ensure that such services are able to protect their transactions from fraud, mistakes, and violation cases.

In addition, regarding Model 2, outcomes indicate that *FL* has a significantly moderating role in the relationship between FinTech indicators (*FI, APMs, TF*, and *PR*) with *SMEs' performance* (beta value = 0.076, Std. dev. = 0.024, t-statistics = 3.174, and p-value = 0.002). Compared to the results of prior studies (Mutlu & Özer, 2022), Lontchi et al. (2023) and Alomari and Abdullah (2023) have supported this result.

Hence, the result indicates that *H2* is accepted. Such outcomes indicate that SMEs in Jordan are strongly benefiting from FL and the diverse indicators of the FinTech.

Finally, it's important to mention that the interview analysis or panel data "if it was available" can be considered as alternative methods for investigation. Such methods can be appropriate for conducting the research.

5. CONCLUSION

In the current rapidly evolving financial markets, the influence of FinTech on the SMEs' performance is both profound and transformative. Through harnessing innovative technologies, FinTech services streamline and organize access to capital, improve operational effectiveness, and facilitate various transactions, enabling SMEs to thrive in competitive and complex economies. As SMEs leverage digital tools for everything from payment processing to data analytics, they not only enhance their financial management but also obtain valuable and worthy insights into customer behaviour and market trends. Investigation of FinTech's role shows a dynamic interplay that fosters growth, drives innovation, and ultimately redefines the way SMEs operate, making it a critical field of research for understanding the future of entrepreneurship.

FinTech indicators such as FI, APMs, TF, and awareness of PR are revolutionizing the way SMEs act, opening new opportunities for growth and resilience. Through providing access to various financial services, such innovations empower SMEs to reach underserved markets, improve cash flow, and enhance customer engagement. APMs, like mobile wallets and peer-to-peer platforms, streamline transactions and decrease barriers to entry, enabling firms to serve a wider audience with a wider competence. When SMEs embrace such services, they become able to boost operational and financial performance, ensure the loyalty of the customers, as well as adapt in an increasingly digital market. This synergy between FinTech indicators is not just a trend; it is considered as a motivation for sustainable development and economic empowerment among the SMEs.

Although there are several prior studies on FinTech, FL and SMEs' performance in developed countries, the Middle East and North Africa region received limited attention. The investigations into such issues are still underdeveloped. Reviewing several previous studies leaves uncertainties in terms of the direction and magnitude of the association between FinTech, FL and SMEs' performance in a unique setting like Jordan. Such uncertainties arise from the variance in Jordanian institutional characteristics compared to other economies.

Therefore, the essential aim of this research is to contribute to the existing research by examining the interaction between FinTech indicators, FL with SMEs' performance in the Jordanian context. The SMEs' performance was measured by the operational and financial indicators. A developed and structured questionnaire was the tool to collect the needed data. The study's population was the SMEs in Jordan. Utilizing SEM to analyse the collected 172 questionnaires, the results revealed that FinTech indicators affect SMEs' performance in a significant and positive way. FL was also found to moderate the relationship of FinTech indicators with SMEs' performance.

This study has a significant contribution to expanding the previous studies regarding FinTech, FL and SMEs' performance. It also contributed to the literature by examining new variables in the developed model, namely, FI, APMs, TF, and PR. The outcomes of this study highlight the importance of FinTech services in enhancing SMEs' performance. Furthermore, the study indicates the important role of FL in linking the relationship of FinTech with SMEs' performance in Jordan. Limitations and implications of this study reveal that the regulatory bodies need to encourage adoption of the FinTech services among Jordanian SMEs. Furthermore, the Jordanian SMEs are encouraged to invest more in the FL. Future studies can examine the interaction of FinTech indicators with firms' performance using secondary data. The influence of FinTech indicators on green sustainable development and economic growth is also considered as a significant subject to investigate. Future studies may explore the regional differences in various Jordanian regions and the role of governmental policies and regulations. They may also investigate the long-term influence of FinTech activities on the performance of the various firms.

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APPENDIX

Table A.1. Measurement of the study's variables

Variable	*Measurement/Question*
Alternative payment methods (*APMs*)	The company shifted to adopting APMs to enhance its service quality.
	By adopting APMs, the company attracts new clients' attention.
	Adopting APMs has led to a reduction the services cost.
	Adopting APMs has affected the company's financial performance in a positive manner.
	Adopting APMs has an influence on the efficiency of a company's performance.
Financial Inclusion (*FI*)	Your company provides several financial services, which are considered beneficial to various segments.
	Your company plays a significant role in enhancing economic development.
	Your company adopts a significant strategy to achieve sustainable development.
	Your company improves the clients' awareness regarding their financial decision-making.
	Assistance people to improve their financial situation is one of the main objectives of your company.
Trust in FinTech (*TF*)	FinTech services are reliable.
	Promises and commitments of the FinTech are always achieved.
	The provided e-transactions and e-procedures through FinTech are reliable.
Perceived risk in FinTech (*PR*)	In your opinion, it is very easy to steal money utilizing FinTech services.
	In your opinion, personal privacy can be disclosed by utilizing FinTech services.
	In your opinion, FinTech services are considered very risky.
Financial literacy (*FL*)	The high ROI will contain high levels of risk.
	The cost of living increases with inflation.
	We save some amount of the received money to face future needs.
	We save money for long-term financial purposes such as (educating, purchasing etc.).
	We tend to live nowadays and let the future happen.
	We've been able to save money in the last year.
Operational SMEs' performance	Your company has minimized manufacturing costs.
	Your company has reduced the defect rate of the products.
	Your company has reduced the product development cycle.
	Your company has provided new techniques to enhance the operational performance.
Financial SMEs' performance	Your company's sales have increased.
	Your company's operating profit rate has been increased.
	Your company's ROI has been increased.
	Costs of the production and logistics have been reduced in your company.