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Mediating Effect of Financial Behaviour on the Influence of Financial Literacy and Financial Technology on Financial Inclusion Development in Jordanian MSMEs

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Abstract: This research investigates the relationship between financial literacy, financial technology, financial behavior, and financial inclusion development in Jordanian MSMEs. Specifically, it seeks to examine whether financial behavior mediates the influence of financial literacy and financial technology on financial inclusion development. This study employs a partial least square structural equation modeling (PLS-SEM) approach to investigate the relationship between financial literacy, financial technology (FinTech), financial behavior, and financial inclusion development in Jordanian micro, small, and medium enterprises (MSMEs). Based on a sample of 334 MSMEs in Jordan, the study found that financial literacy and FinTech have a significant impact on financial inclusion development in MSMEs. Additionally, financial behavior was found to mediate the relationship between financial literacy and FinTech on financial inclusion development. The findings of this study suggest that financial literacy and FinTech can be useful tools in promoting financial inclusion in MSMEs, and that financial behavior plays a crucial role in realizing their full potential. The study provides insights into the factors that influence financial inclusion in MSMEs and has implications for policymakers, financial institutions, and MSMEs in Jordan and other emerging economies. The use of PLS-SEM in this study provides a robust statistical approach for analyzing the complex relationships between the variables of interest. The scientific novelty of this study lies in its focus on the mediating effect of financial behavior on the relationship between financial literacy, financial technology, and financial inclusion development in Jordanian MSMEs.

Keywords: financial behaviour, financial inclusion development, financial literacy, FinTech, partial least square structural equation modeling.

金融行为对金融素养和金融技术对约旦中小微企业普惠金融发展影响的中介作用

摘要：本研究调查了约旦中小微企业的金融素养、金融技术、金融行为和金融普惠发展之间的关系。具体而言，它试图检验金融行为是否调节金融素养和金融技术对普惠金融发展的影响。本研究采用偏最小二乘结构方程模型(偏光扫描电镜)方法来调查约旦微型、小型和

中型企业(中小微企业)的金融知识、金融技术(金融科技)、金融行为和金融普惠发展之间的关系。该研究以约旦334家中小微企业为样本，发现金融知识和金融科技对中小微企业的普惠金融发展具有重大影响。此外，金融行为被发现可以调节金融素养和金融科技在普惠金融发展方面的关系。这项研究的结果表明，金融知识和金融科技可以成为促进中小微企业金融普惠的有用工具，而金融行为在充分发挥其潜力方面发挥着至关重要的作用。该研究深入了解了影响中小微企业金融包容性的因素，并对约旦和其他新兴经济体的决策者、金融机构和中小微企业产生了影响。在本研究中使用偏光扫描电镜提供了一种强大的统计方法，用于分析感兴趣的变量之间的复杂关系。本研究的科学新颖性在于其关注金融行为对约旦中小微企业金融素养、金融技术和金融普惠发展之间关系的中介作用。

关键词：金融行为、普惠金融发展、金融知识、金融科技、偏最小二乘结构方程建模。

1. Introduction

Financial inclusion is a critical issue in developing countries because many individuals and small businesses are excluded from the formal financial system. This exclusion can limit their access to credit, savings, insurance, and other financial services [1]. Without access to these services, individuals and small businesses may struggle to grow and develop, which can perpetuate poverty and economic inequality. Recently, there has been increasing recognition of the importance of financial inclusion as a driver of economic growth and poverty reduction [2]. By providing affordable and accessible financial services to individuals and small businesses, financial inclusion can help promote economic development, create jobs, and reduce poverty. This is because financial services can help individuals and small businesses to invest in their futures, increase their productivity, and manage risks. In Jordan, the government has recognized the importance of financial inclusion and has made significant efforts to promote it. One of the ways the government has promoted financial inclusion is establishing a regulatory framework to support the development of the microfinance sector [3]. Microfinance institutions provide small loans and other financial services to individuals and small businesses excluded from the formal financial system. The government's efforts to foster growth in the microfinance industry contribute to wider availability of financial services and greater economic participation. When it comes to fostering economic growth and eliminating poverty, financial inclusion is a crucial notion in developing countries [4]. The efforts of governments, financial institutions, and other stakeholders to promote financial inclusion can have a significant impact on the well-being of individuals and small businesses, as well as the broader economy. Despite the efforts made by the Jordanian government to promote financial inclusion, the level of financial inclusion in Jordan is still low, especially among MSMEs. There are several reasons for this. One reason is the lack of financial literacy among the general population [5]. Many people, especially those in rural areas, do not have sufficient knowledge or skills to make informed financial decisions, which can limit their access to financial services. Another factor that contributes to the low level of financial inclusion is the limited access to financial services. Many individuals and MSMEs in Jordan have limited access to formal financial institutions such as banks, which can make it difficult for them to access financial services [6]. This can be due to a lack of physical access to bank branches or strict eligibility criteria for loans and other financial products. However, the emergence of Fintech has brought new opportunities for financial inclusion. Fintech companies use technology to provide innovative and cost-effective financial services, which can be accessed through mobile phones and other digital devices [7]. Fintech can help individuals and MSMEs to overcome the barriers to financial inclusion, such as the lack of physical access to banks. Therefore, understanding the impact of financial literacy, Fintech, and financial behavior on financial inclusion development is crucial for MSMEs in Jordan. By improving financial literacy and promoting the adoption of Fintech, it may be possible to increase access to financial services and promote financial inclusion. Additionally, understanding financial behavior, such as savings and investment habits, can help identify potential barriers to financial inclusion and inform policies and programs to promote financial inclusion. By addressing these factors, it may be possible to increase financial inclusion among MSMEs in Jordan and promote economic growth and development. However, the relationship between financial literacy, Fintech, and financial inclusion development is complex, and financial behavior plays a crucial role in mediating this relationship. Financial

behavior can act as a bridge between financial literacy, Fintech, and financial inclusion development. For example, even if individuals and MSMEs have access to financial services and are financially literate, they may not necessarily use those services or make informed financial decisions. This can limit the effectiveness of financial literacy programs and Fintech adoption initiatives in promoting financial inclusion. Understanding the mediating effect of financial behavior on the relationship between financial literacy, Fintech, and financial inclusion development is essential for developing effective policies and programs to promote financial inclusion in Jordanian MSMEs. By identifying the factors that influence financial behavior and developing strategies to promote positive financial behavior, it may be possible to improve financial inclusion and promote economic growth and development.

2. Literature Review

2.1. Financial Inclusion Development

Financial inclusion is an important topic that has gained increasing attention recently, particularly in developing countries, where a large proportion of the population remains excluded from the formal financial system. The World Bank [8] defines financial inclusion as "the access and usage of financial services by individuals and enterprises to improve their economic opportunities and welfare." Access to financial services, such as savings accounts, credit, and insurance, is a critical component of economic development and poverty reduction. In Jordan, the government has made significant efforts to promote financial inclusion, particularly in the microfinance sector [6]. The Central Bank of Jordan has established a regulatory framework to support the development of microfinance institutions (MFIs) and encourage financial institutions to serve the unbanked and underbanked segments of the population. The government has also established a credit guarantee scheme to provide collateral to MFIs to enable them to lend to MSMEs [9]. Despite these efforts, the level of financial inclusion in Jordan remains low, particularly among MSMEs. According to the World Bank [8], only 30% of adults in Jordan have a bank account, and only 10% of MSMEs have access to formal credit. Limited access to finance is a significant barrier to MSME growth and development, particularly in the absence of alternative financing sources. MSMEs are a critical source of employment and economic growth, and improving their access to financial services is essential for promoting economic development and poverty reduction in Jordan [10]. Financial inclusion is influenced by several factors, including financial literacy, access to financial services, and financial behavior. Financial literacy refers to the knowledge and understanding of financial products, services, and concepts, as well as the ability to apply that knowledge to make informed financial decisions. Limited financial literacy can prevent individuals and MSMEs from effectively using financial services, which can contribute to their exclusion from the formal financial system [5].

2.2. Effect of Financial Literacy on Financial Behavior and Financial Inclusion Development

Financial literacy is the ability to understand and use financial concepts effectively. It involves knowledge of financial products and services, budgeting, savings, investing, and debt management. Financial literacy is essential for individuals and businesses to make informed financial decisions, manage their money effectively, and access financial services [2]. A lack of financial literacy can be a significant barrier to financial inclusion. In Jordan, financial literacy is low, particularly among low-income and rural populations. According to a survey conducted by the Central Bank of Jordan, only 30% of adults in Jordan have a basic level of financial literacy, and only 6% have a high level of financial literacy [11]. In Jordan, financial literacy levels are low, particularly among women and rural populations. A survey conducted by the Jordan Strategy Forum in 2016 found that only 24% of Jordanians have a basic understanding of financial concepts, and only 15% have a high level of financial literacy [12]. This low level of financial literacy can hinder financial inclusion efforts in Jordan, particularly among vulnerable and marginalized populations. The low level of financial literacy in Jordan can be attributed to several factors, including the limited availability of financial education and training programs. According to the Central Bank of Jordan, only 7% of Jordanians have received financial education and training, and most of them are concentrated in urban areas [11]. This lack of financial literacy can make it difficult for individuals and businesses to understand the benefits and risks of financial products and services, which can limit their ability to access and use financial services. Financial literacy is positively associated with financial inclusion [13-15]. Studies have shown that individuals with higher levels of financial literacy are more likely to use formal financial services and products, such as bank accounts, loans, and insurance [16]. Financial literacy can also help individuals and businesses to avoid high-cost informal financial services, such as money lenders and pawnshops, and reduce their vulnerability to financial shocks [17]. Therefore, improving financial literacy can play a crucial role in enhancing financial inclusion, particularly among MSMEs in Jordan. Therefore, this study developed the following hypotheses:

H_1: There is a significant and positive effect of financial literacy on financial inclusion development.

H_2: There is a significant and positive effect of

financial literacy on financial behavior.

2.3. Effect of Financial Technology (Fintech) on Financial Behavior and Financial Inclusion Development

Financial technology, or Fintech, is an emerging field that is transforming the financial services industry by providing innovative and cost-effective financial products and services [18]. Fintech can play a critical role in promoting financial inclusion by enabling the provision of financial services to underserved and unserved populations [19]. Fintech innovations, such as mobile banking, e-wallets, and peer-to-peer lending platforms, can expand access to financial services and reduce the cost of financial transactions. In Jordan, Fintech is an emerging industry that is gaining momentum, particularly in the payments and remittances sectors. The Central Bank of Jordan has established a regulatory sandbox to encourage the development of Fintech solutions and enable innovative financial services to be tested in a controlled environment [11]. Fintech solutions can enhance financial inclusion in Jordan by providing cost-effective and accessible financial services to underserved and unserved segments of the population. Financial technology (Fintech) has emerged as a new driver of financial inclusion, particularly in developing countries. Fintech refers to the use of digital technology to provide financial services, such as mobile banking, mobile payments, and peer-to-peer lending [20]. Fintech can overcome traditional barriers to financial inclusion, such as physical distance, high transaction costs, and limited access to formal financial services. In Jordan, Fintech has gained momentum recently, and several Fintech startups have emerged to provide innovative and affordable financial services to individuals and businesses [21]. The adoption of Fintech can enhance financial inclusion by providing accessible and affordable financial services to individuals and businesses, particularly those in underserved areas. According to a survey conducted by the Jordanian Ministry of Digital Economy and Entrepreneurship in, Fintech services can reach more than 50% of unbanked individuals in Jordan [22]. Moreover, Fintech can enhance financial literacy by providing user-friendly and accessible financial education and training programs through digital platforms [23].

H_3: There is a significant and positive effect of financial technology on financial inclusion development.

H_4: There is a significant and positive effect of financial technology on financial behavior.

2.4. Financial Behaviour as a Mediator

Financial behavior refers to the actions and decisions that individuals and businesses make with regards to their finances, such as savings, investing, and borrowing. Financial behavior can be influenced by a range of factors, including financial literacy and the adoption of new financial technologies such as Fintech. Positive financial behavior is essential for financial inclusion, as it enables individuals and businesses to make informed financial decisions and access financial services effectively. On the other hand, negative financial behavior can lead to financial exclusion and limit individuals and businesses' access to financial services. In the context of MSMEs in Jordan, research has shown that financial behavior plays a significant role in financial inclusion. According to [24], MSMEs in Jordan that exhibit positive financial behavior, such as maintaining financial records, seeking financial advice, and using financial services, are more likely to access credit from formal financial institutions. The study also found that MSMEs with positive financial behavior are more likely to grow and succeed in their business operations. Moreover, previous studies have also found that financial behavior can be influenced by financial literacy. For instance, [25] found that financial education programs can lead to improvements in financial behavior, such as increased savings and reduced debt. Additionally, research has suggested that the adoption of Fintech can also influence financial behavior. Fintech innovations, such as mobile banking and digital payments, can increase financial access and convenience, leading to changes in financial behavior, such as increased savings and more frequent use of financial services [8]. Given the importance of financial behavior in financial inclusion, it is essential to understand how financial literacy and Fintech adoption can influence financial behavior and, in turn, impact financial inclusion development in MSMEs in Jordan. This understanding can help policymakers and financial service providers to design and implement effective interventions that promote positive financial behavior and improve financial inclusion levels. Financial behavior is another crucial factor that can influence financial inclusion development. Financial behavior refers to the actions and decisions that individuals and businesses make concerning financial products and services. Financial behavior can be influenced by a range of factors, such as financial literacy, social norms, attitudes, and values. Financial behavior can have a significant impact on financial inclusion development, as it determines the extent to which individuals and businesses access and use formal financial services and products. Financial behavior can be positively or negatively influenced by financial literacy and Fintech adoption. For instance, individuals with high levels of financial literacy may exhibit more responsible financial behavior, such as savings and investing in formal financial products, while those with low levels of financial literacy may engage in risky financial behavior, such as overborrowing and using informal financial services [26]. Similarly, the adoption

of Fintech can influence financial behavior by providing convenient and affordable financial services, such as mobile banking and payments, which can encourage responsible financial behavior [27].

H_5: There is a significant and positive effect of financial behavior on financial inclusion development.

H_6: Financial behavior mediates the effect of financial literacy and financial technology on financial inclusion development.

2.5. Theory of Planned Behavior

The theory of planned behavior (TPB) is a well-known framework in social psychology that helps understand how people's attitudes, subjective norms, and perceived behavioral control can influence their behavior [28]. In the context of financial literacy, Fintech, and financial inclusion, TPB can help explain how individuals' intentions to use Fintech can influence their financial behavior, which affects their level of financial inclusion. When an individual has a positive attitude toward using Fintech and perceives that they have control over using these services, their intention to use Fintech is likely to be stronger. This intention to use Fintech is an important precursor to the actual use of Fintech, and it is a key driver of positive financial behavior, such as increased savings or investment [29]. In this way, TPB can help explain how an individual's attitudes and perceived behavioral control can influence their intentions to use Fintech and how these intentions can affect their financial behavior. This relationship is important because positive financial behavior can ultimately lead to greater financial inclusion [21]. For example, if an individual has access to Fintech services that allow them to save or invest more easily, they may be more likely to engage in positive financial behavior. This, in turn, may lead to greater financial inclusion because they can save and invest more effectively, which can help improve their financial well-being over time. Hence, TPB is a useful framework for understanding the complex relationships between financial literacy, Fintech, and financial inclusion development and can provide insights into how to design effective interventions that promote positive financial behavior and ultimately lead to greater financial inclusion.

2.6. Theoretical Framework

The study is based on a conceptual framework that proposes that financial literacy and financial technology adoption have a direct effect on financial inclusion development in Jordanian micro, small, and medium enterprises (MSMEs). In addition, the framework suggests that the relationship between financial literacy, financial technology adoption, and financial inclusion development is mediated by financial behavior.

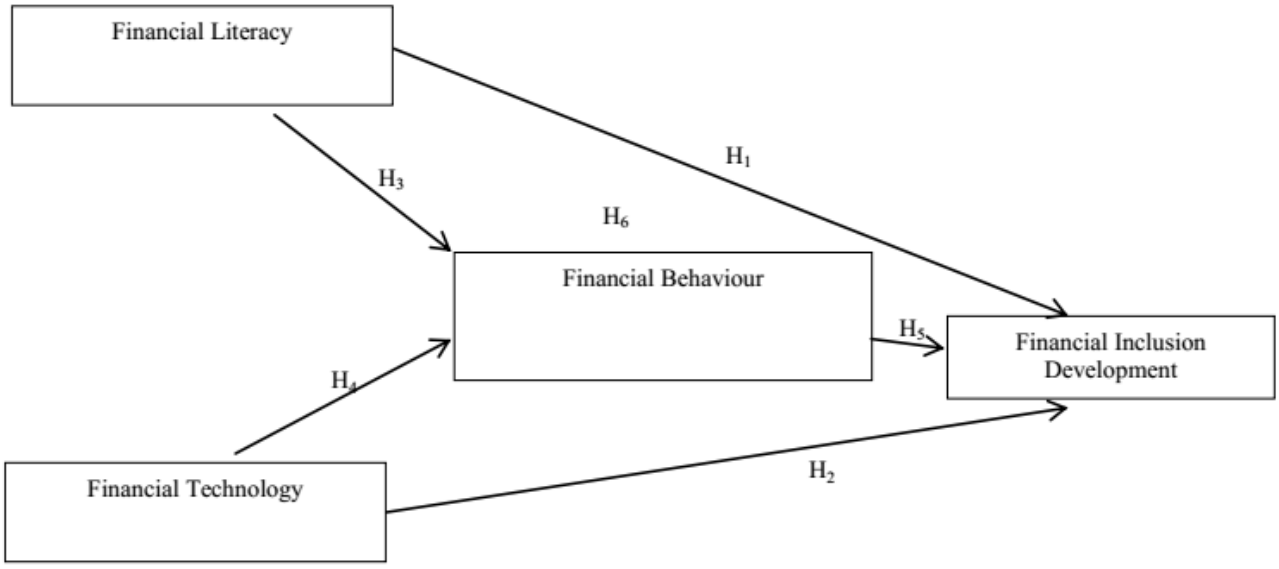

Fig. 1 Research framework (Developed from the previous studies)

3. Methodology

The study used a quantitative research design to examine the mediating effect of financial behavior on the influence of financial literacy and financial technology on financial inclusion development in Jordanian micro-, small, and medium enterprises (MSMEs). The data for this study were collected using a self-administered questionnaire that was distributed to a sample of MSMEs in Jordan. The study population comprised 138500 Jordanian micro-, small, and medium enterprises. Hence, the sample size of this study is 384 MSMEs in Jordan [30]. The sample was selected using a convenience sampling technique. After receiving the questionnaires, the researchers screened the completed questionnaires and removed 50 that were not completed correctly, resulting in a total of 334 samples used for the analysis. The questionnaire consists of three sections: Financial Literacy: This section will measure the financial literacy of the MSMEs using a set of validated items adapted from previous studies [31, 32]. Financial Technology: This section will measure the adoption of financial

technology by the MSMEs using a set of validated items adapted from previous studies [33, 34]. Financial Behavior and Financial Inclusion Development: This section will measure the financial behavior and financial inclusion development of the MSMEs using a set of validated items adapted from previous studies [32, 35]. The items were evaluated using a ten-point Likert scale with a range from (1) "Strongly Disagree" to (10) "Strongly Agree". The data collection lasted from October 2022 to January 2023. The study complies with ethical principles, including informed consent, anonymity, confidentiality, and protection of participants' rights. The participants were informed about the purpose of the study and their rights as participants. The data collected was kept confidential, and the results were reported in aggregate form to protect the privacy of the participants. The data collected was analyzed using PLS-SEM. PLS-SEM is a second-generation multivariate analysis technique that is suited to studies with small sample sizes and non-normal data.

4. Results

In research, it is important to ensure that the data collected is accurate and complete to avoid any biases in the analysis. One common issue that can arise is missing data, where a respondent may not answer a particular question in the survey. To address this, the missing value analysis was conducted for each measurement item. This analysis looked at the percentage of missing values for each item, and if there were missing values, they were replaced with the median response for that particular item. This helped ensure that the data was as complete as possible. Another issue that can arise is outliers, which are extreme values significantly different from the rest of the data. Outliers can skew the results of the analysis and make it difficult to draw accurate conclusions. To check for outliers, the standardized (z) values of each variable were examined, as well as histograms and box-plots. An outlier case was identified if its standardized score was ±4.0 or higher, which was based on the criteria used in previous studies by [34] and [36]. Any values that exceeded this threshold were considered outliers. By conducting these analyses, the researchers could identify any missing data and outliers in the dataset and take steps to address them. This helped ensure that the data were as accurate and reliable as possible and that the results of the analysis were not influenced by any biases or outliers.

4.1. Measurement Model

To ensure that the measures used in the study are reliable and valid, various tests were conducted. The internal consistency process was used to assess the reliability of the measures, which involved testing the composite reliability (CR) values. Composite reliability is a measure of the extent to which a set of items is consistently measuring a latent construct. In this study, all the variables displayed composite reliability values greater than 0.7, which is considered acceptable in social sciences (Table 1). In addition to assessing the composite reliability, the factor loading for the variables was evaluated, with values greater than 0.6 considered acceptable. Only FT6 had a factor loading below 0.6, but this was still within the recommended range from [37]. Moreover, the Cronbach alpha (CA) value exceeded 0.7, which is another indicator of internal consistency [38]. To assess the convergent validity of the measures, the Average Variance Extracted (AVE) values were calculated, with values greater than 0.5 considered acceptable. The AVE values are a measure of the amount of variance captured by the construct relative to the measurement error. All the AVE values in this study exceeded 0.5 (Table 1), indicating good convergent validity. Discriminant validity was evaluated using the Fornell-Larcker test and Hetromonotrait Analysis. The Fornell-Larcker test compares the square root of the AVE for each latent variable with the correlation between the latent variables. If the square root of the AVE for each latent variable is greater than its correlation with other variables, discriminant validity is supported. As shown in Table 2, the variables met the criteria for discriminant validity. The heteromonotrait analysis involves comparing the correlation between two constructs to the correlation of each construct with itself. If the correlation between two constructs is greater than their correlation with themselves, then there is a potential issue with discriminant validity. However, in this study, all HTMT values were considerably below the threshold of 0.90, indicating that discriminant validity was not a concern (Table 3). In summary, the reliability and validity tests conducted in this study indicate that the measures used are reliable and valid, and that the data collected is suitable for the analysis.

Table 1 Measurement model (Developed by the authors)

Variables	Loading	CA	CR	AVE
Financial Inclusion Development		0.910	0.927	0.615
FID1	0.8			
FID2	0.727			
FID3	0.771			
FID4	0.797			
FID5	0.809			
FID6	0.766			
FID7	0.792			
FID8	0.807			
Financial Behaviour		0.919	0.931	0.577
FB1	0.771			
FB2	0.806			
FB3	0.84			
FB4	0.723			
FB5	0.729			
FB6	0.722			
FB7	0.741			
FB8	0.732			
FB9	0.724			
FB10	0.795			
Financial Technology		0.915	0.932	0.663
FL1	0.813			

Continuation of Table 1				
FL2	0.877			
FL3	0.799			
FL4	0.803			
FL5	0.863			
FL6	0.829			
FL7	0.783			
Financial Literacy		0.921	0.937	0.680
FT1	0.745			
FT2	0.748			
FT3	0.821			
FT4	0.812			
FT5	0.864			
FT6	Deleted			
FT7	0.873			
FT8	0.828			

Table 2 Fornell-Larcker criterion analysis to check discriminant validity (Developed by the authors)

	Financial Behaviour	**Financial Inclusion Development**	**Financial Literacy**	**Financial Technology**
Financial Behaviour	0.759			
Financial Inclusion Development	0.524	0.784		
Financial Literacy	0.663	0.678	0.824	
Financial Technology	0.592	0.572	0.699	0.814

Table 3 Heteromonotrait analysis discriminant validity (Developed by the authors)

	Financial Behaviour	**Financial Inclusion Development**	**Financial Literacy**	**Financial Technology**
Financial Behaviour				
Financial Inclusion Development	0.881			
Financial Literacy	0.814	0.752		
Financial Technology	0.845	0.857	0.873	

4.2. Common Method Bias (CMB)

Common method bias (CMB) is a potential issue in studies that employ self-report measures, as it refers to the shared variance between the measured constructs that is due to a common method of measurement rather than the constructs themselves [39]. This can result in an overestimation or underestimation of the true relationships between the constructs. To assess the potential for CMB in this study, Harman's single factor test was conducted, which is a widely used and accepted approach to identify whether a single factor underlies the majority of the variance in a dataset [39]. If a single factor accounts for a large proportion of the variance, it may indicate CMB. In contrast, if the first factor accounts for less than 50% of the variance, this suggests that CMB is unlikely to be a major concern [39]. In addition to Harman's single factor test, common latent factor (CLF) analysis was conducted to evaluate the possibility of CMB in the study. CLF analysis involves adding a common latent factor to the model to capture the variance shared by all variables due to the measurement method [39]. If the addition of the common factor does not improve the model fit, this indicates that CMB is not a significant issue. In this study, the results of Harman's single factor test showed that the first factor explained 45.218% of the variance, which is below the 50% threshold, indicating that CMB is not likely to be a major concern. The CLF analysis also indicated that the addition of a common factor did not improve the model fit, further supporting the absence of CMB in the study. Overall, these analyses suggest that the results of this study are not significantly affected by CMB.

Table 4 CMB result (Developed by the authors)

Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	12.661	45.218	45.218	12.661	45.218	45.218

4.3. Goodness of Fit (GoF)

As PLS-SEM does not offer a comprehensive Goodness of Fit (GoF) index, researchers often rely on the R2 value to evaluate the model's explanatory power [40]. In this study, the model fit was evaluated using the goodness of fit (GoF) index for PLS-SEM. The examination of measurement and structural models revealed that all models were precise and that the proposed theoretical model had strong predictive and explanatory capabilities.

$$GoF = \sqrt{AVE \times R^2} = \sqrt{0.615 \times 0.865} = \sqrt{0.532} = 0.729$$

4.4. The Results of the Structural Model Analysis

The results in Table 5 and Fig. 2 revealed that the use of financial technology has a positive impact on the financial inclusion development of micro, small, and medium enterprises in Jordan. The results indicate that even a small increase in the adoption of financial technology can lead to a significant increase in financial inclusion. The study showed a significant and positive relationship between financial technology and financial inclusion development. Specifically, the study found that a 1% increase in financial literacy would lead to a 36.7% increase in financial inclusion

development in Jordanian MSMEs. This result was supported by the previous studies of [19] and [21]. This suggests that integrating financial technology in the financial services offered to micro-, small, and medium enterprises can be an effective approach to promote financial inclusion and improve the financial health of these businesses. The findings also suggest that the use of financial technology can help address some of the traditional barriers to financial inclusion, such as limited physical access to financial services or the high cost of traditional banking services. By providing a more accessible, convenient, and cost-effective way for micro, small, and medium enterprises to access financial services, financial technology can help level the playing field and create more opportunities for these businesses to grow and thrive. The study concludes that financial technology can increase financial inclusion and foster the growth of micro-, small, and medium-sized businesses in Jordan. The findings suggest that financial literacy plays a crucial role in enhancing financial inclusion development in Jordanian Micro, Small and Medium Enterprises (MSMEs). The study showed a significant and positive relationship between financial literacy and financial inclusion development. Specifically, the study found that a 1% increase in financial literacy would lead to a 42.6% increase in financial inclusion development in Jordanian MSMEs. This indicates that having a higher level of financial literacy can significantly improve the likelihood that MSMEs will participate in formal financial systems and benefit from financial services. Overall, the results suggest that financial education and training programs can be an effective way to promote financial inclusion in MSMEs in Jordan. By improving the financial literacy of business owners and entrepreneurs, financial institutions and policymakers can help to foster a more inclusive financial system that supports the growth and development of MSMEs. This study is in line with the studies of [13], [14], and [15]. The study found that there is a significant and positive effect of financial technology on financial behavior in Jordanian micro, small, and medium enterprises. This means that when financial technology is implemented in these enterprises, there is an increase in positive financial behavior. The result of a 1% increase in financial technology leading to a 50.4% increase in financial behavior suggests that the use of financial technology has a strong impact on financial behavior. Therefore, the study accepted the hypothesis H1a, which proposed that financial technology has a significant and positive effect on financial behavior in Jordanian micro, small, and medium enterprises. The positive effect of financial technology on financial behavior could be attributed to several factors. For example, financial technology provides more convenient and efficient financial services, making it easier for businesses to manage their finances. It can also improve access to financial services for those who may not have had access before, which can lead to increased financial literacy and positive financial behavior. In addition, the use of financial technology can help businesses better track and manage their finances, leading to more informed financial decisions and behaviors. Overall, the study suggests that the use of financial technology is an important factor in promoting positive financial behavior in Jordanian micro-, small, and medium enterprises. This finding suggests that financial literacy is an important factor in shaping the financial behavior of micro, small, and medium enterprises (MSMEs) in Jordan. The results indicate that as the financial literacy of MSMEs increases by 1%, their financial behavior also increases by 36%. This indicates a strong positive relationship between financial literacy and financial behavior in the context of Jordanian MSMEs. The results of this study suggest that promoting financial literacy among MSMEs in Jordan could lead to improved financial behavior, which could in turn contribute to better financial performance and ultimately economic growth. This is because when MSMEs have a better understanding of financial concepts and tools, they are more likely to make informed financial decisions that lead to improved financial outcomes. Additionally, this finding is consistent with previous research that suggests that financial literacy is a key factor in determining financial behavior. This underscores the importance of financial education programs for MSMEs, which could help improve their financial literacy and ultimately lead to improved financial behavior. Overall, this study provides important insights into the relationship between financial literacy and financial behavior in the context of Jordanian MSMEs, which could be useful for policymakers and practitioners in developing strategies to promote financial inclusion and economic growth in the country. This result suggests that there is a strong relationship between financial behavior and financial inclusion development in Jordanian micro, small, and medium enterprises. Financial behavior refers to the actions and decisions made by individuals or businesses in managing their financial resources, such as budgeting, savings, investing, and borrowing. Financial inclusion development, on the other hand, refers to the process of increasing access to and usage of financial services and products, particularly among underserved and marginalized groups. The finding that a 1% increase in financial behavior would lead to a 20.8% increase in financial inclusion development implies that improving financial behavior can be an effective way to promote financial inclusion in Jordanian micro, small, and medium enterprises. This could involve providing financial education and training to help businesses develop better financial management skills, as well as creating an enabling environment that encourages responsible financial behavior, such as through regulatory reforms and the

development of financial infrastructure. By improving financial behavior, businesses may be more likely to access and use financial services, which in turn can contribute to their overall financial inclusion and ultimately lead to economic growth and development.

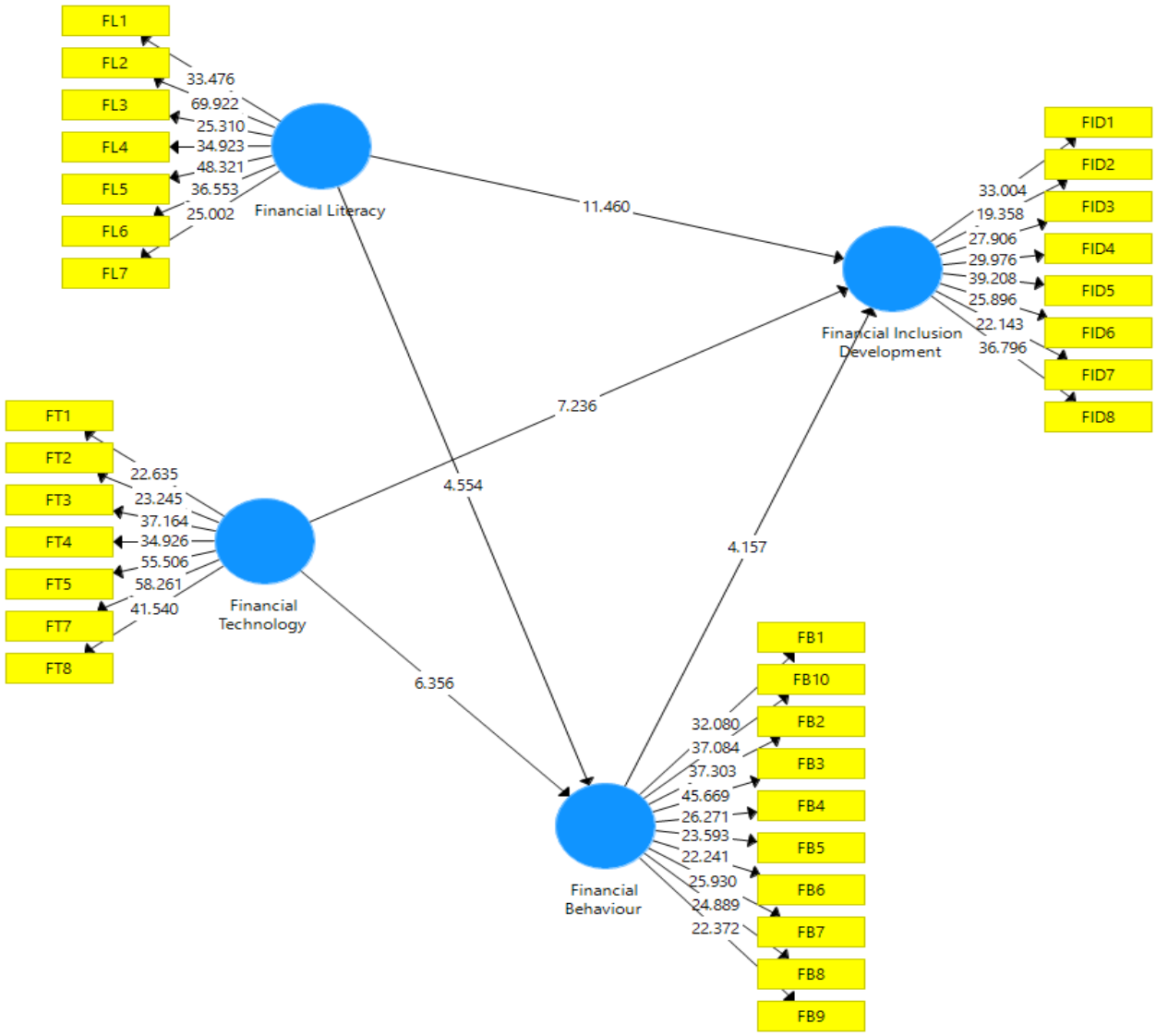

Fig. 2 Results of the structural model analysis (Developed with PLS software)

Table 5 Summary of the path coefficients (Developed by the authors)

	Estimates	Standard Deviation	T-Statistics	P Values
Financial Technology -> Financial Inclusion Development	0.367	0.053	6.900	0.000
Financial Literacy -> Financial Inclusion Development	0.426	0.04	10.669	0.000
Financial Technology -> Financial Behaviour	0.504	0.083	6.11	0.000
Financial Literacy -> Financial Behaviour	0.360	0.081	4.45	0.000
Financial Behaviour -> Financial Inclusion Development	0.208	0.052	4.02	0.000

4.5. Mediating Analysis

This study followed the guidelines proposed by [41-43] to test the mediating relationship. The researchers used the bootstrapping method, indirect effect, and variance accounted for (VAF) to assess the mediating relationship. [42] noted that the indirect effect must have a 95% boot confidence interval (CI: LL-UL) that does not cross zero between variables. The results of the mediating hypothesis are presented in Table 6.

Table 6 Indirect effect (Developed by the authors)

	Estimates	Standard Deviation	T-Statistics	P Values
Financial Technology -> Financial Behaviour -> Financial Inclusion Development	0.105	0.025	4.238	0.000
Financial Literacy-> Financial Behaviour -> Financial Inclusion Development	0.075	0.029	2.621	0.009

Table 6 reveals the bootstrap results indicated that the indirect effect (Financial Technology -> Financial

Behaviour -> Financial Inclusion Development, β = 0.105, t-value of 4.238) was significant at p< 0.01. The researchers also confirmed a mediation given that the indirect effect 0.105, 95% Boot CI: (LL= 0.066, UL= 0.161) does not straddle 0 in between, which indicated support for the mediating effect. The results show the mediating role of financial behaviour between financial technology and financial inclusion development. Additionally, Table 6 revealed that the bootstrap results indicated that the indirect effect (Financial Literacy-> Financial Behaviour -> Financial Inclusion Development, β = 0.0.075, t-value of 2.621) was significant at p < 0.01. The researchers also confirmed a mediation given that the indirect effect 0.075, 95% Boot CI: (LL= 0.030, UL= 0.147) does not straddle 0 in between, which indicated support for the mediating effect. The results show the mediating role of financial behaviour between financial literacy and financial inclusion development. Thus, the researchers can conclude that financial behaviour has a positive mediating the effect on the relationship between financial literacy, financial technology, and financial inclusion development.

The results of the study suggest that there is a relationship between FinTech and financial inclusion development, and that this relationship is mediated by financial behavior. This means that the way MSMEs behave financially, such as their financial decision-making and management practices, plays a role in the extent to which FinTech can contribute to their financial inclusion. In other words, FinTech can be a tool to improve financial inclusion in MSMEs, but only if the businesses have a certain level of financial literacy and responsible financial behavior. The study suggests that MSMEs in Jordan can benefit from FinTech, but that efforts to promote financial education and responsible financial behavior should also be a priority for policymakers and other stakeholders. Overall, the study highlights the importance of understanding the role of financial behavior in the use and impact of FinTech, and the need for a comprehensive approach to promoting financial inclusion and leveraging FinTech in MSMEs.

The results of the study suggest that there is a relationship between financial literacy and financial inclusion development, and that this relationship is mediated by financial behavior. This means that the way MSMEs behave financially, such as their financial decision-making and management practices, plays a role in the extent to which financial literacy can contribute to their financial inclusion. In other words, financial literacy can be a tool to improve financial inclusion in MSMEs, but only if the businesses have a certain level of financial behavior that supports responsible financial decision-making and management practices. The study suggests that MSMEs in Jordan can benefit from financial literacy programs, but that efforts to promote responsible financial behavior should also be a priority for policymakers and other stakeholders. Overall, the study highlights the importance of understanding the role of financial behavior in the use and impact of financial literacy programs, and the need for a comprehensive approach to promoting financial inclusion and improving financial behavior in MSMEs.

Table 7 presents the R2 values that indicate the extent to which the independent variables account for the variance in the dependent variable. The results show that only 86.5% of the variance in financial inclusion development is explained by the financial inclusion development predictors, leaving approximately 13.5% of the variation due to error variance. Similarly, the predictors of financial behavior explain 67.2% of its variance, with approximately 32.8% of the variance due to error variance. Moreover, the exogenous latent constructs have substantial f2 values. However, in this study, the predictive relevance Q2 values of all the exogenous latent constructs were small. As per [43], a Q2 value of 0.02, 0.15, and 0.35 indicates small, medium, or large predictive relevance for a particular endogenous construct, respectively.

Table 7 Summary of the coefficient of determination (Developed by the authors)

	R^2	R^2 Adjusted	f^2	Q^2
Financial Inclusion Development	0.865	0.864	0.424	0.496
Financial Behaviour	0.674	0.672	0.282	0.349

5. Conclusion and Limitations

The study examined the mediating effect of financial behavior on the relationship between financial literacy, financial technology (FinTech), and financial inclusion development in Jordanian micro, small, and medium enterprises (MSMEs). The results of the study provide evidence that financial literacy and FinTech are positively related to financial inclusion development in MSMEs. In addition, the study found that financial behavior plays a mediating role in this relationship, suggesting that the effect of financial literacy and FinTech on financial inclusion development is partly explained by the behavior of MSMEs in managing their finances. The study's findings underscore the importance of promoting financial literacy and FinTech in enhancing financial inclusion in MSMEs in Jordan and other emerging economies. Policymakers, financial institutions, and MSMEs should collaborate to develop and implement financial literacy programs and improve access to FinTech solutions to enhance financial inclusion development in MSMEs. Moreover, the study's findings suggest that efforts to improve

financial behavior, such as promoting responsible financial decision-making and management practices, should be integrated into financial literacy and FinTech programs to maximize their impact on financial inclusion development. Overall, the study provides insights into the complex relationships between financial literacy, FinTech, financial behavior, and financial inclusion development in MSMEs and highlights the importance of adopting a holistic approach to promoting financial inclusion in these businesses. The use of PLS-SEM provides a rigorous statistical approach for analyzing these relationships and adds to the existing literature on the topic. Further research could explore the generalizability of the findings to other contexts and examine additional factors that could influence financial inclusion in MSMEs. Several limitations to the study should be taken into account when interpreting the results. First, the study relied on self-reported data from MSMEs in Jordan, which may be subject to response bias and may not accurately reflect the actual financial behavior of these businesses. Second, the study was limited to Jordanian MSMEs, and therefore, the generalizability of the findings to other countries or contexts may be limited. Third, the study focused only on financial behavior as a mediating variable and did not explore other potential mediating variables that could explain the relationship between financial literacy, FinTech, and financial inclusion development in MSMEs. Fourth, the study did not examine the potential interaction effects between financial literacy, FinTech, financial behavior, and other factors that could influence financial inclusion development in MSMEs. Finally, the study only employed a cross-sectional research design, which limits the ability to draw causal inferences about the relationships between the variables of interest. Overall, these limitations suggest that the findings of the study should be interpreted with caution and that further research is needed to replicate and extend the findings in other contexts and using different research designs. The study contributes to the academic literature in several ways. First, it provides empirical evidence on the relationships between financial literacy, financial technology, financial behavior, and financial inclusion development in the context of Jordanian MSMEs. Second, it showed that financial behavior plays a crucial mediating role in the relationship between financial literacy, financial technology, and financial inclusion development. Third, it uses PLS-SEM to analyze the data, which is a novel approach for examining the mediating effect of financial behavior in the existing literature. The findings of this study have important implications for policymakers, financial institutions, and MSMEs in Jordan. By promoting financial literacy and adopting financial technology, policymakers can enhance financial inclusion in Jordanian MSMEs. Financial institutions can design financial products and services that cater to the needs of MSMEs, while MSMEs can improve their financial behavior to enhance their access to finance. Overall, this study contributes to the academic literature on financial inclusion in MSMEs and provides practical insights for policymakers and stakeholders in Jordan.

5.1. Managerial Implications

The study has several managerial implications for policymakers, financial institutions, and MSMEs in Jordan and other emerging economies. First, the study highlights the importance of promoting financial literacy and FinTech solutions to enhance financial inclusion development in MSMEs. Policymakers and financial institutions can develop and implement financial literacy programs and improve access to FinTech solutions to enhance the financial capabilities of MSMEs. Second, the study emphasizes the role of financial behavior in mediating the effect of financial literacy and FinTech on financial inclusion development in MSMEs. Policymakers, financial institutions, and MSMEs can collaborate to develop and implement interventions that promote responsible financial decision-making and management practices among MSMEs. Third, the study highlights the need for a holistic approach to promoting financial inclusion in MSMEs. Policymakers and financial institutions can integrate efforts to improve financial behavior, such as promoting responsible financial decision-making and management practices, into financial literacy and FinTech programs to maximize their impact on financial inclusion development. Finally, the study emphasizes the need for policymakers and financial institutions to tailor financial literacy and FinTech programs to the specific needs and characteristics of MSMEs in their respective contexts. Programs that are designed with the unique challenges and opportunities of MSMEs in mind are more likely to be effective in promoting financial inclusion development. Overall, the study provides actionable insights for policymakers, financial institutions, and MSMEs in Jordan and other emerging economies to promote financial inclusion development in MSMEs.

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