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RETRACTED: The Nexus between sustainability of business model innovation, financial knowledge, and environment: A developing economy perspective

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This study intends to investigate how aspects such as financial knowledge and the rate of technological advancement influence the lifetime of enterprises in developing nations like Pakistan. For this purpose, a survey study was designed to obtain data from 325 business owners in different parts of the country. Structural Equation Modelling (SEM) was utilized to analyze this dataset. According to the analysis outcomes, not only do practices connected to financial literacy and innovation play a crucial role in a firm's long-term viability, but they also have a substantial beneficial impact on the company's viability. The research concluded that an increase in financial knowledge, expertise, and experience in corporate operations helps the continued viability of firms. Knowledge of financial concerns also predicted the company's ability to innovate and adapt. In addition to the environmental sustainability of the business. As a result, it was concluded that it plays the role of a mediator in the link between innovation and the ongoing existence of businesses. Because of this, financial literacy is now acknowledged as a vital knowledge resource for determining one's financial course of action, which was not the case previously. According to the study's conclusions, for businesses to continue to be sustainable, authorities need to enhance their financial literacy level and adopt sustainability models into their day-to-day operations.

KEYWORDS

business model innovation, financial knowledge, SEM, sustainable environment, developing economy

Introduction

The global competition among companies has become more complicated due to internationalization and the pressure to keep up with sustainable development goals. As a result, conventional business models are having trouble finding acceptable solutions for the new environment. It is because the concept of the sustainable business model is an alternative to the traditional business model. As a result, the ultimate objective of sustainable business models has always been to create value for what is known as the "triple bottom line," which consists of economic, social, and environmental factors (Khan et al., 2021). The principles of sustainability and the integration of sustainability goals into the value proposition, value creation, and value capture activities of businesses can be effectively incorporated into businesses through the use of sustainable business models, which have a significant potential for doing so. When it comes to achieving sustainability objectives, sustainable business models prioritize the use of proactive multi-stakeholder management, innovative solutions, and a focus on the long term (Riad Shams and Belyaeva, 2019). Therefore, sustainable business models have effectively contributed to reducing the harmful effects of business activities on the environment and society by providing solutions to assist businesses in simultaneously meeting their economic and sustainability goals. It has resulted in the models' ability to contribute to the reduction of these harmful effects effectively. As a result, the idea of a sustainable business model has evolved to give a framework for combining sustainability-related factors. From this point of view, sustainable business models and circular business models are pretty comparable to one another. Nevertheless, they have different qualities, the majority of which are devoted to reducing the rate of resource loops as well as increasing their intensity and decreasing their size.

The necessity for businesses to make a commitment to sustainable development was driven home at the 26th United Nations Climate Change Conference, which took place in Glasgow, Scotland. Within this framework, the conference addressed the necessity of transforming many industries' business models for sustainability (O'Riordan, 2022). A business model for sustainability, also known as a sustainable business model (SBM), is how a firm develops, delivers, and collects value while simultaneously creating positive effects and minimizing adverse impacts on the environment and community (Shakeel et al., 2020).

There are a significant number of factors contributing to humanity's appalling pattern of resource extraction from the planet. People are cutting down trees at an alarmingly fast rate, leading to deforestation; they use excessive water and energy, which dries up lakes and causes energy shortages (Mandal, 2021). In addition, the human race is exploiting countries with cheap wages, and the use of child labor is still tolerated. These efforts have ultimately contributed to a change in climate as well as a reduction in the amount of biodiversity (Legagneux et al., 2018).

The ever increasing demand for creativity and long-term viability has led to an increase in businesses that include sustainability practices in their operational procedures. On the other hand, it would appear that the currently used BMs are outdated because they do not consider sustainability and innovation as (individual) building blocks (Troise et al., 2021). On the other hand, some companies have found a way to include sustainable business practices into their BM, while other companies completely ignore the issue of sustainability. The emergence of SBMs marked the beginning of a new age in business modeling, which coincided with the growing significance of environmentally conscious business practices (Christie et al., 2021).

Education on money matters is crucial to the functioning of both society and the economy as a whole. Citizens with greater control over their financial situations can better make decisions that benefit themselves and the nation. They will engage financial service providers when they are active users of financial services, which will lead to additional growth in the business. They will back such action because it originates from them and, as a result, contributes to more significant economic expansion. The term "financial competence" refers to a person's level of financial literacy as well as their education, knowledge, and abilities, as well as their ability to manage. Financially capable people have the knowledge, experience, attitudes, and behaviors necessary to know their financial prospects (Fürstenau and Hommel, 2019). These people also make well-informed choices appropriate for their circumstances and take steps to improve their economic well-being. An education in finance will, in the end, result in a viable business, provided that the company owner can display expertise in money management and make an informed decision to improve the business.

A sustainable business model generates value for customers and the community by incorporating activities that benefit society, the environment, and the economy into its day-to-day operations (Ranta et al., 2018). The approach seeks, in addition to monetary value for the company's owners, various forms of value for various stakeholders, such as employees and customers. Because of this, social inclusion, environmental preservation, and eventually the viability of the company can result. The findings indicate that the level of sustainability of a company is high when its owners and managers plan and budget well in advance of the business period, have a solid understanding of the financial market, are knowledgeable about investments, make use of investment products, and have a strong command of financial literacy (van Konijnenburg et al., 2018). They can confidently navigate the market and take advantage of the various financial products that are accessible, thanks to their knowledge of the financial market. They know how and where to invest when there is a surplus and a deficit and where to obtain cash to make up for any gaps. According to this study, the awareness of and use of insurance products such as burglary, fire, and even accidents boost business sustainability because it provides the option to buffer against unanticipated occurrences. Because expansion chances depend on the entrepreneurs' level of credit market knowledge, which is a problem in most developing nations due to asymmetric information, credit knowledge and the utilization of credit are both essential for small enterprises. In the period under consideration, knowledge of financial practices contributes to an increase in business sustainability, but knowledge of saves and savings products has a detrimental effect on firm sustainability.

Literature review

The research discusses various topics that relate to the operation of businesses sustainably. A sustainable business improves the quality of life for all its stakeholders, helps protect the natural world, and positively contributes to the economy (Hartig and Wallace, 2015). In light of this definition and keeping in mind the SBM definition that was presented earlier, we are in a position to assert that sustainable businesses require an SBM. It is not enough, for instance, for a sustainable company to come out with a brand-new environmentally friendly product (as a value to its customers). How can something be sustainable if the procedures by which value is created, such as how a corporation designs and sells a product, damage the surrounding environment? How can something be sustainable if its value capture, the method by which the corporation earns returns on the commodity it has supplied, creates negative social impacts, such as fostering excessive consumerism (Gosal and Kamase, 2021)?

Because of this, financial literacy is a resource that can be made available to sustainable business models to create firm value, which ultimately leads to more sustainable outcomes over the long run (Babajide et al., 2021). Furthermore, research has shown a positive correlation between an entrepreneur's financial literacy level and company performance. It suggests that an entrepreneur's ability to understand and manage their company's finances can significantly impact the company's ability to adapt to shifting market conditions and achieve higher-quality results throughout their business's lifetime. Some studies have demonstrated, for instance, that financial literacy is essential to the continuation of sustainable company models. It is because entrepreneurs with low levels of financial knowledge are more likely to commit numerous errors (Panagiotakopoulos, 2019). These findings have also been supported by more recent research (Atellu et al., 2021), which demonstrates how a person's level of financial literacy has an immediate impact on the viability of a company's business models, while other factors, such as a company's access to credit and its risk tolerance, serve as intermediaries in this relationship.

Numerous studies have been conducted to establish the significance of financial literacy to the effectiveness and longevity of firms. According to (Watanapongvanich et al., 2021), financial literacy is a significant ability that enables individuals to navigate the financial markets while making well-informed decisions. As a result, financial literacy helps reduce people's misunderstandings regarding various aspects of finance. Increasing the financial literacy of a company's owners can improve its access to capital and help it avoid incurring losses due to unwise choices. Due to the inadequate production of financial statements and inadequate knowledge of accounting information systems, owners of small businesses are subject to a high rate of loan rejection (Kodongo, 2018). Preparing standard financial statements and disseminating actionable information to stakeholders, such as bankers and lenders, increases the likelihood that small business owners will be able to acquire necessary financial resources.

Furthermore, literacy in financial matters makes the preparation of loan applications more effective. It provides the path for small business owners to give convincing arguments during client interviews, which enables them to manage the challenges of an ever-changing business and financial market environment (Bris et al., 2021). Technically speaking, financial literacy improves small and medium-sized enterprises' eligibility for and access to resources, as well as reduces the cost of financing; this, in turn, enables the creation of a solid capital structure, which is a major factor in a company sustainability.

This research combines the latest research on Business Model Frameworks, Sustainable Innovation, Sustainable Business Models, and Transition Management. The researchers aim to determine the key success factors and barriers to transitioning BM's into SBM's. By doing so, the researchers stipulate the differences between BM's and SBM's. The approach of this study may help firms in the future to detect dissonances at an early stage in the SBM formulation.

Data and hypothesis development

For data collection, a structured questionnaire was utilized; such surveys are an effective means of collecting data on the beliefs, values, opinions, and attitudes held by a sample population. Using a questionnaire to conduct a survey makes it possible to collect data from a representative sample spread over various sectors and geographical regions. The questions on the questionnaire were derived from those used in earlier research carried out in various settings. To evaluate the reliability of the questionnaire, it was distributed to five prominent Pakistani academics and five chief financial officers of relevant companies. As a result of the input they provided, a couple of the items were modified or reworded to better suit the situation in Pakistan. The final questionnaire had four key

TABLE 1 Sampling profile and characteristics.

	Sector			Employees size				Age ranging		
	Production	Services	Trading	5–15	16–30	31–45	46–60	≤5	6–15	16–25
Frequency	140	110	75	115	83	67	60	155	105	65
Percentage	43.06	33.84	23.10	35.38	25.54	20.62	18.46	47.69	32.31	20

sections. Data were collected from 325 Chief Financial Officers working in the sector. See Table 1 for more explanation.

Hypothesis H_1. There is a positive correlation between financial literacy and business sustainability.

The firm's performance and ability to gain a competitive edge depend on its tangible and intangible resources (Zahra, 2021). For businesses to maintain their advantage over their competitors, they require a diverse array of resources and a comprehensive knowledge base. Furthermore, (Franco et al., 2021), discovered that the presence of intellectual capital benefits the long-term viability of businesses. Therefore, a good understanding of finances plays a crucial part in the value creation process that organizations go through, ultimately leading to sustainable performance. A company's knowledge base can be expanded through the promotion of financial literacy, which enables the company to better respond to shifts in the operating environment and capitalize on possibilities made available by such shifts. Therefore, to improve their knowledge capacities, businesses need to have a solid understanding of the significance of financial literacy and its roles in strategic decision-making. Companies with a good understanding of finance are more likely to use good financial management techniques, which will benefit their growth and long-term viability. Therefore, the assumption is that financial literacy has a beneficial effect on the long-term viability of businesses.

Hypothesis H_2. Innovation is favorably influenced by a person's level of financial literacy.

Despite the direct influence that financial literacy has on the long-term performance of companies, there is also an indirect influence that financial literacy has on the long-term success of companies through the adaption of innovation. Studies on business finance have frequently highlighted that innovation adaption is an issue in this sector, and a lack of financial literacy has been identified as a major factor for firms' high failure rate of innovation (Byegon, 2020). It is because firms are generally dependent on internally generated technology. Numerous studies have been conducted to ascertain the level of significance that financial literacy possesses concerning the various facets of the performance of businesses, most notably their ability to remain in operation (Widiastuti, 2021). Therefore, an increase in financial literacy boosts organizations' physical access to innovation, makes innovation more inexpensive, and makes it easier to construct a healthy capital structure, ultimately improving sustainability.

Hypothesis H_3. The relationship between innovative practice and long-term sustainability is mediated by financial literacy.

More discussion and debate are needed in the field of study regarding the connections between financial literacy, innovation, and sustainability in businesses. There is still a limited amount of study on the connection between financial literacy, innovation, and sustainability in the rising body of literature on financial literacy. A company's level of financial literacy can be measured by the amount to which it is willing to explore possibilities requiring skilled human resources in endeavors, the consequences of which are unpredictable. To put it another way, the mentality of an organization toward financial literacy reveals how enthusiastic it is about having skilled human resources willing to accept challenges and responsibilities (Struckell et al., 2022). A constructive outlook on the financial literacy system may contribute to an awareness of the risks associated with running a firm and to successful financial and strategic performance. If a company improves its financial literacy, it may have a more positive attitude toward its financial risks and challenges. Increasing a company's financial literacy would assist the company in enhancing its knowledge and managerial skills, ultimately leading to improved management of its financial resources and affairs (Nikitina et al., 2020). It was hypothesized by (Ali et al., 2020) that increased levels of financial literacy would make it simpler for businesses to benefit from increased levels of competition in the financial market. It is because financially literate businesses have improved financial knowledge and risk management abilities. A more informed perspective on one's financial situation can also help decision-making. In addition, a solid understanding of finances can help businesses make better-informed decisions and rationales for their actions, which can cut down on the possible losses connected with taking risks. A person's financial literacy level may affect the degree to which certain strategic solutions are viewed as having acceptable risk. Those risks may include opportunities to generate extremely high returns on investments. Small and medium-sized businesses (SMEs) with high levels of financial literacy are more likely to engage in strategic risk-taking, which may improve the businesses' long-term viability.

TABLE 2 Item loadings and consistency of hypothesis.

Items	Item loadings	Cronbach's α	Composite reliability	Average variance extracted	rho_A
F-lit (1)	0.791	0.854	0.869	0.797	0.815
F-lit (2)	0.758				
F-lit (3)	0.841				
Sus (1)	0.815	0.915	0.891	0.963	0.898
Sus (2)	0.811				
Sus (3)	0.845				
Innov (1)	0.793	0.755	0.987	0.857	0.786
Innov (2)	0.869				
Innov (3)	0.785				
Item loadings (1)	0.779	0.756	0.875	0.897	0.851
Item loadings (2)	0.753				
Item loadings (3)	0.852				
Item loadings (4)	0.841				
Item loadings (5)	0.756				
Item loadings (6)	0.761				
Item loadings (7)	0.897				
Item loadings (8)	0.887				
Item loadings (9)	0.779				
Item loadings (10)	0.868				

TABLE 3 Descriptive statistics and variable's correlation matrix with AVE and CR model.

Variable description	CR	AVE	Innov	F-lit	Sus
Innovation	0.927	0.712	0.801		
Financial literacy	0.915	0.645	0.452	0.822	
Sustainability	0.963	0.701	0.487	0.458	0.811
Mean			0.541	0.459	0.531
Stand. Dev			0.651	0.604	0.592
Cronbach's α			0.807	0.912	0.891

Results and discussion

The convergent validity, reliability, and item loadings of the hypothesis in Table 2 for the dependent and independent variables were examined. They all fall within the permitted range of 0.70, as evidenced by the results. Using Cronbach's Alpha, we can see that our item variables are over the permissible range of 0.70. These findings suggest that the data utilized in the study was derived from credible sources. The validity of a test's construct is an evaluation of how well it measures what it is designed to. Reliability analysis and convergence were used to conduct the assessment. No statistically significant differences were found between CR and the average variance extracted (AVEs).

In order to evaluate the standardized factor loadings, validity, and trustworthiness of the data of concern, we performed a Confirmatory Factor Analysis (CFA). In addition, the proposed's consistency and reliability were evaluated using Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). The constructs' descriptive statistics, discriminant validity, CR values, and AVE values are presented in Table 3, respectively.

The outcome of CFA with 18 latent constructs did not yield a satisfactory result when it was first run. In order to enhance the precision and coherence of the conceptual framework, four parameters were eliminated from the evaluation because their outer interpreting data were below 0.4. An exploratory analysis performed on the 14 latent constructs that remained provided a more positive outcome: The result obtained from the Kaiser-Meyer-Olkin (Glen, 2016) test was 0.831, and the value obtained from Bartlett's test of sphericity was 0.001 (Ahrens et al., 2020). A reasonable level of diagnostic dependability may be inferred from the fact that all of the other indicator outer loadings were greater than 0.7 and described more than fifty percent of the variance in the respective statistic.

The respondents' financial knowledge and ability levels are displayed in the table's upper section, which may be accessed here. This section demonstrates that most business owners with degrees from higher education institutions understand financial products and their workings. The findings of environmentally responsible business practices may be found in the table's middle

TABLE 4 Confirmatory factor loading (CFL).

Constructs	Object	Measuring group	CFL
Financial literacy	F-lit	Income and expense records retained	0.851
		No, we don't keep track of how much we get and spend	Dropped
		Knowledge of what to do if you have more assets than liabilities	0.874
		Do you participate in the stock market?	Dropped
		Knowledge and Practice—an insurance product	0.752
		Do you aware that you may protect your company from the occurrence of unanticipated events?	0.771
		Knowledge and practice of saving	0.852
Sustainability	Sus	Recycle and reuse old items	0.781
		Aware of the negative effects on the surrounding environment that improper disposal of waste products can have	Dropped
		Renewable sources of power are used in the daily operations of your company	Dropped
		Our organization participates in community development initiatives	0.761
		Our hiring policy welcomes applicants from all backgrounds	0.842
		Production waste is minimized deliberately	0.964
Innovation	Innov	what largely leads to launching the innovation at your organization	0.743
		introduced new or significantly changed products	0.853
		introduced new or significantly changed services	0.884
		introduced new or significantly changed processes or ways of organizing the work	0.756
		introduced new or significantly changed ways of communicating with external parties	0.886

TABLE 5 Indicator impact based on bootstrap technique.

Trail	Evaluation	Stand. E	Confidence level at 95%	
			Upper	Lower
F-lit→SBM→Sus	0.19**	0.0417	0.137	0.071
F-lit→SBM→Innov	0.29**	0.0411	0.141	0.068

Note: Number of observations is 325, unstandardized trail coefficients are depicted, ** show the probability at 5% level.

section. The investigation revealed that most business owners already engage in all three important sustainability measures. In addition, it demonstrates the amount of work invested into putting sustainability into practice. The following table outlines the various sustainable practices implemented by business owners. It provides evidence that the businesspeople in question are aware of the repercussions that come with decreasing resources. The company's proprietors are also aware of the negative effects of incorrect disposal of waste goods on the surrounding environment. The final section of Table 4 discusses the innovative steps that the companies have taken in their production and service processes. In this region, business people are eager to incorporate additional innovation into producing goods and providing services.

Table 5 displays the findings obtained from investigations into the particular indirect impacts. It was done to determine which factors impacted the results most. Using the bootstrapping method, we generated 5,000 sub-samples at a confidence level of 95%. We put four different hypotheses to the test. The findings indicate that the level of financial literacy directly impacts the organization's longevity ($\beta = 0.19$, $p = 0.001$). As a result of our findings, hypothesis one was validated; specifically, we found a positive correlation between financial literacy and the industry's longevity. The fourth hypothesis contended a connection between financial literacy and long-term viability. In addition, a person's level of financial literacy correlates with a 0.29 for innovation. It was noted that having a good understanding of finances makes a positive and significant contribution to the innovation process in a sustainable business model.

The three factors of financial literacy, access to innovation, and sustainability combined describe 82 percent of the variation in sustainability ($R^2 = 0.82$), whereas financial literacy alone predicted 54 percent of the variance in innovation and 29 percent of the variance in sustainability.

TABLE 6 hypothesis testing and their outcomes.

	Hypothesis			Confidence level at 95%	
	H_1 (F-lit→SBM)	H_2 (Sus→SBM)	H_3 (Innov→SBM)	Upper	Lower
Coefficient	0.851***	0.742***	0.756**	0.129	0.028
T-Statistics	5.520	5.550	3.319	0.148	0.056
Prob. Value	0.000	0.001	0.049	0.165	0.069

Note: Number of observations is 325, unstandardized trail coefficients are depicted, **, *** show the probability at 5% and 1%, respectively.

TABLE 7 Hypotheses testing summary.

Hypotheses	Evaluation	Finding
H_1: There is a positive correlation between financial literacy and innovation	0.19**	Acknowledged
H_2: There is a positive correlation between financial literacy and sustainability	0.35**	Acknowledged
H_3: The connection between innovative practices and environmentally responsible practices is mediated by financial literacy	0.15**	Acknowledged
H_4: The connection between innovative practices, environmentally and sustainable business model responsible practices are mediated by financial literacy	0.58**	Acknowledged
Financial literacy related to sustainability (cumulative impact)	0.45**	

Note: Number of observations is 325, unstandardized trail coefficients are depicted, ** show the probability at 5% level.

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The first hypothesis was tested by employing financial literacy, environmentally sustainable practices, and innovative thinking as indicators of a sustainable business strategy. Table 6 contains the findings of the study. The first model, H_1, presents the test results to determine whether financial literacy is a significant factor in determining a sustainable business model ES ($p < 0.05$ for t-test = 5.520, $\beta = 0.851$). The findings indicate that having a solid understanding of one's financial situation is an important factor in developing a company strategy with longevity. Furthermore, it demonstrates that there will be an 85.1 percent increase in the business's capacity to endure when there is a one percent improvement in financial literacy.

The significance of environmental sustainability as a factor of sustainable business model ES is tested in the second model (H_2), which demonstrates that the significance test is significant (β = 0.742; t = 5.550, $p < 0.05$). This conclusion demonstrates that environmental sustainability is important in determining whether a company strategy is sustainable. It demonstrates that a one percent improvement in environmental sustainability will result in a 74.2 percent improvement in the business's level of sustainability. The more efforts are made to conserve and safeguard the environment; the more businesses can thrive and ensure the survival of future generations. Recycling allows the reuse of materials that would otherwise be thrown away. If it cannot be avoided, then it must be disposed of appropriately so as not to cause damage to the environment for succeeding generations.

In hypothesis (H_3), the test of innovation sustainability as a determinant of a sustainable business model was performed. The results of this test showed that the alternate hypothesis (H_3) should be accepted, while the null hypothesis should be rejected. From this, innovation is a crucial factor in determining what constitutes a sustainable business model. According to the findings of the beta test, an increase in the innovation of just one percent will result in a 75.60 percent rise in the level of company sustainability. Table 7 presents a summary of the findings obtained from the testing of the hypothesis.

We investigated how financial literacy and a person's perspective on the acceptability of innovation influence the connection between financial literacy and long-term viability. The results indicate that the model fits the data adequately (X^2/df = 2.076, GFI = 0.92, CFI = 0.96, TLI = 0.95, RMSEA = 0.057) and that the RMSEA value is 0.057.

The quality of the model is determined by the various techniques for deciding model quality, outlined in the footprints of Table 8. The results of the goodness of fit statistics demonstrate that all of the parameters and conceptual frameworks have a satisfactory level of agreement, which suggests that the utilization of the model for the aforementioned hypothesis is appropriate and offers sufficient proof of the presence of an association between the variables and the predictor variable.

Discussion

This study's objective was to investigate the connection between financial literacy and the long-term viability of

TABLE 8 Results of the goodness of fit of the model.

Method	Factors suggested	Model goodness of fit
NFI	>0.9	0.952
RMSEA	<0.08	0.071
X^2/DF	<3.0	71.05
AGFI	>0.8	0.850
p-value	<0.05	0.001
GFI	>0.8	0.990
IFI	>0.9	0.971
CFI	>0.9	0.966

Note: Here NFI, stands for normed fit index; RMSEA, represents the root mean square error of approximation; X^2/DF, is chi-square/degree of freedom; AGFI, is denoting as adjusted goodness of fit; *p*-value indicates the probability of level of significance; GFI, stands for the goodness of fit index; IFI, is incremental fix index and CFI, represents the comparative fit index.

businesses. We investigated the direct and indirect effects of a firm's financial literacy on its capacity to remain profitable using an integrated structural equation model. Following the completion of an exhaustive assessment of the relevant prior research, we conceived a conceptual framework. We devised four hypotheses that would serve as the foundation for this investigation. According to the findings, having a solid understanding of finances benefits the longevity and creativity of a business. Additionally, the relationship between innovation and sustainability was found to be partially mediated by one's level of financial literacy. The presence of the moderating mechanism positively impacts the sustainable business model.

We discovered that financial literacy is an essential component of an organization's intellectual capital, and as a result, our findings support their conclusions. In addition, having a solid understanding of finance helps to strengthen the long-term viability of a company by ensuring that it can weather unexpected economic downturns and the dynamic nature of the financial and credit markets (Ocloo et al., 2020). In addition, having a strong understanding of finance helps individuals better manage their money and makes it less likely that they will make costly financial mistakes.

Since there is a gap in the literature, which we aimed to address by exploring the impact of financial literacy on the long-term viability of firms, we found that greater education levels can reduce the inherent risks that are connected with entrepreneurial endeavors. In most cases, businesses are defined by a lack of information concerning finances and a deficiency in administrative abilities. Their accessibility to new ideas is hindered as a result of these shortcomings. We observed that having a solid understanding of finances has a beneficial effect on the viability of innovations. It suggests that businesses must have a strong grasp of financial matters to compete with 'innovation.

Our fourth hypothesis was validated as a result of the discovery that the availability of financial literacy acted as a mediator in the connection between innovative practices and the long-term viability of businesses. Financial literacy acts as a mediator in the interaction between innovative practices and the long-term viability of businesses is indisputable. The ability to construct a viable and suitable capital structure for an organization is made possible for businesses by a level of financial literacy. As a result, businesses can reduce their capital expenses and improve their long-term viability. The study made by (Mendes-Da-Silva, 2018) that financial literacy influences innovation and sustainability, and consequently firms' performance, is supported by the findings that we have obtained. In addition, the results of our study are in agreement with the findings of (Hassan Al-Tamimi and Anood Bin Kalli, 2009), who concluded that having a solid understanding of finance is essential to the process of making prudent investment decisions and mitigating risk, which in turn increases the longevity of a company. As a result, organizations can make better decisions, leading to increased sustainability. It is important to note, as a result, that financial literacy is essential to the long-term viability of businesses. Not only is it directly related to the concept of long-term viability, but it also indirectly influences the concept through its associations with access to finance and financial risk attitude. As a result, the inquiry that we conducted into the linkages between the financial literacy of firms and the sustainability of those enterprises led us to discover new ways in which financial literacy might contribute to the sustainability of businesses.

The findings of the study indicate that financial literacy and innovative thinking are directly related to the longevity of businesses. The development of financial literacy and competence substantially contributes to the long-term viability of small businesses. Significant factors that determine the long-term viability of a company include economic and environmental sustainability and social inclusion. This demonstrates that managers become more sustainable as they increase their financial knowledge and skill set and the number of financial products they utilize.

Even though it contributes to the existing body of research on financial literacy, this study has a few drawbacks. If the sample was expanded to cover the entire country, a more accurate representation of the situation would result. Due to the cross-sectional nature of this research, the researchers could not determine any cause-and-effect links between the many factors that were examined. Researchers in the future are strongly encouraged to use longitudinal research methods to investigate the causal links that link these factors. Fourth, our study only looked at two possible middlemen in the triangle formed by financial literacy, innovation, and sustainability. As a result, it would be beneficial to broaden our model to include additional potential mediating and moderating variables to strengthen its capacity for explanation.

Conclusion and suggestion

The purpose of this study was to investigate how financial literacy affects the sustainability and creativity of the firm? Specifically, we wanted to examine the effect that a firm's level of financial literacy has on a firm's ability to continue. The model was validated with data obtained from 325 companies based in Pakistan using a structured questionnaire. According to the findings, both financial literacy and innovation have an immediate impact on the long-term viability of businesses, and long-term viability acts as a mediator between innovation and financial literacy. As a result, we concluded that a firm's level of financial literacy is a significant factor in determining the degree to which it will innovate and remain viable.

This study contributes to the research on the financial literacy and practice of firms, as well as the research on the sustainability of firms. The study's findings indicate that economic sustainability, social responsibility, and environmental sustainability contribute to businesses' long-term viability. The findings of the study indicate that owners and managers of small businesses need to have a basic understanding of finance and the abilities essential for effective financial management to increase their companies' longevity. It is not sufficient for owners of businesses to develop and run businesses; they must run their businesses sustainably to ensure future generations' well-being is not jeopardized. According to the study's findings, it is imperative for business owners to contribute to society and make a profit to ensure their companies' longevity.Table 8

The findings of the study suggest that having a solid understanding of financial markets and products and having a basic level of financial literacy can contribute to an increase in the longevity of a small business. As a result, the research suggests that businesses should protect the environment that is immediately surrounding them by guaranteeing the correct disposal of waste items, recycling waste items, and avoiding the use of printing papers. They should also engage in tree planting and use alternative forms of energy to power their activities. In addition, for a small business to be socially responsible, it is important that it protects its customers, that it employs members of the community (particularly those who are vulnerable when possible), that it maintains fair pricing for its products, and that it gives back to the community whenever it is possible to do so. Last but not least, businesses need to ensure that they have adequate business oversight to increase their profitability. They should also make use of the various financial products available to them, such as credit and insurance products, stay away from savings products and instead invest the money they have saved and implement sound financial management practices within their companies.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Ahrens, R. de B., Lirani, L. da S., and de Francisco, A. C. (2020). Construct validity and reliability of the work environment assessment instrument WE-10. *Int. J. Environ. Res. Public Health* 17, 7364. doi:10.3390/ijerph17207364

Ali, S., Li, G., Yang, P., Hussain, K., and Latif, Y. (2020). Unpacking the importance of intangible skills in new product development and sustainable business performance; strategies for marketing managers. *PLoS One* 15, e0238743. doi:10.1371/journal.pone.0238743

Atellu, A. R., Muriu, P., and Sule, O. (2021). Do bank regulations matter for financial stability? Evidence from a developing economy. *J. Financ. Regul. Compliance.* 29, 514–532. doi:10.1108/JFRC-12-2020-0114

Babajide, A., Osabuohien, E., Tunji-Olayeni, P., Falola, H., Amodu, L., Olokoyo, F., et al. (2021). Financial literacy, financial capabilities, and sustainable business model practice among small business owners in Nigeria. *J. Sustain. Finance Invest.*, 1–23. doi:10.1080/20430795.2021.1962663

Bris, A., Wang, T. Y. H., Zatzick, C. D., Miller, D. J. P., Fern, M. J., Cardinal, L. B., et al. (2021). Knights, raiders, and targets - the impact of the hostile takeover - coffee,Jc, lowenstein,L, roseackerman,S. *J. Bank. Financ.*

Byegon, G. (2020). Linkage between self-control, financial innovations and financial inclusion. A moderated mediation analysis across levels of financial literacy (The case of owners of Microenterprise in Kenya). European Journal of Business and Management Research, 5 (4). doi:10.24018/ejbmr.2020.5.4.294

Christie, L., Kempen, E., and Strydom, M. (2021). Custom-made apparel manufacturing micro-enterprise owners' perspectives on sustainability: how higher education can contribute. *Int. J. Sustain. High. Educ.* 22, 1503–1519. doi:10.1108/IJSHE-05-2020-0153

Franco, M., Neves, D., Haase, H., and Rodrigues, M. (2021). The importance of intellectual capital in networks formed by start-ups. *Int. J. Organ. Anal.* doi:10.1108/IJOA-06-2021-2840

Fürstenau, B., and Hommel, M. (2019). Developing financial competence about mortgage loans by informal learning using banks' online calculators. *Empir. Res. Vocat. Educ. Train.* 11, 10. doi:10.1186/s40461-019-0085-z

Glen, S. (2016). Kaiser-Meyer-Olkin (KMO) test for sampling adequacy. *From Statistics How To. com: Elementary Statistics for the rest of us*, 35–64.

Gosal, B., and Kamase, R. (2021). Identification of financial literacy level–case study of small business owner or manager in gowa regency. *J. Manag. ER* 1 (1), 35–64.

Hartig, J. H., and Wallace, M. C. (2015). Creating world-class gathering places for people and wildlife along the Detroit Riverfront, Michigan, USA. *Sustain* 7, 15073. doi:10.3390/su71115073

Hassan Al-Tamimi, H. A., and Anood Bin Kalli, A. (2009). Financial literacy and investment decisions of UAE investors. *J. Risk Finance* 10, 500–516. doi:10.1108/15265940911001402

Khan, I. S., Ahmad, M. O., and Majava, J. (2021). Industry 4.0 and sustainable development: A systematic mapping of triple bottom line, circular economy and sustainable business models perspectives. *J. Clean. Prod.* 297, 126655. doi:10.1016/j.jclepro.2021.126655

Kodongo, O. (2018). Financial regulations, financial literacy, and financial inclusion: Insights from Kenya. *Emerg. Mark. Finance Trade* 54, 2851–2873. doi:10.1080/1540496X.2017.1418318

Legagneux, P., Casajus, N., Cazelles, K., Chevallier, C., Chevrinais, M., Guéry, L., et al. (2018). Our house is burning: Discrepancy in climate change vs. biodiversity coverage in the media as compared to scientific literature. *Front. Ecol. Evol.* 5. doi:10.3389/fevo.2017.00175

Mandal, R. K. (2021). Trend and effect of population in India: A scenario analysis. *J. Glob. Econ.* 17, 129–139. doi:10.1956/jge.v17i3.628

Mendes-Da-Silva, W. (2018). *Individual behaviors and technologies for financial innovations*. Berlin: Springer Nature. doi:10.1007/978-3-319-91911-9

Nikitina, T., Lapina, I., Ozolinš, M., Irbe, M. M., Priem, M., Smits, M., et al. (2020). Competences for strengthening entrepreneurial capabilities in Europe. *JOItmC.* 6, 62. doi:10.3390/JOITMC6030062

Ocloo, J., Goodrich, J., Tanaka, H., Birchall-Searle, J., Dawson, D., and Farr, M. (2020). The importance of power, context and agency in improving patient experience through a patient and family centred care approach. *Health Res. Policy Syst.* 18, 10. doi:10.1186/s12961-019-0487-1

O'Riordan, T. (2022). COP 26 and sustainability science. *Environment*. 64 2. doi:10.1080/00139157.2022.1999748

Panagiotakopoulos, A. (2019). In-work poverty: reversing a trend through business commitment. *J. Bus. Strategy* 40, 3–11. doi:10.1108/JBS-01-2019-0008

Ranta, V., Aarikka-Stenroos, L., and Mäkinen, S. J. (2018). Creating value in the circular economy: A structured multiple-case analysis of business models. *J. Clean. Prod.* 201, 988–1000. doi:10.1016/j.jclepro.2018.08.072

Riad Shams, S. M., and Belyaeva, Z. (2019). Quality assurance driving factors as antecedents of knowledge management: a stakeholder-focussed perspective in higher education. *J. Knowl. Econ.* 10, 423–436. doi:10.1007/s13132-017-0472-2

Shakeel, J., Mardani, A., Chofreh, A. G., Goni, F. A., and Klemeš, J. J. (2020). Anatomy of sustainable business model innovation. *J. Clean. Prod.* 261, 121201. doi:10.1016/j.jclepro.2020.121201

Struckell, E. M., Patel, P. C., Ojha, D., and Oghazi, P. (2022). Financial literacy and self employment – the moderating effect of gender and race. *J. Bus. Res.* 139, 639–653. doi:10.1016/j.jbusres.2021.10.003

Troise, C., Tani, M., Dinsmore, J., and Schiuma, G. (2021). Understanding the implications of equity crowdfunding on sustainability-oriented innovation and changes in agri-food systems: Insights into an open innovation approach. *Technol. Forecast. Soc. Change* 171, 120959. doi:10.1016/j.techfore.2021.120959

van Konijnenburg, E. M. M. H., Gigengack, M., Teeuw, A. H., Sieswerda-Hoogendoorn, T., Brilleslijper-Kater, S. N., Flapper, B. C., et al. (2018). A mixed methods study on evaluations of Virginia's STEM-focused governor's schools. *Diss. Abstr. Int. Sect. B Sci. Eng.*

Watanapongvanich, S., Khan, M. S. R., Putthinun, P., Ono, S., and Kadoya, Y. (2021). Financial literacy, financial education, and smoking behavior: Evidence from Japan. *Front. Public Health* 8, 612976. doi:10.3389/fpubh.2020.612976

Widiastuti, E. (2021). Technology based financial services innovation, financial literacy and its impact on financial behavior. *J. Account. Manag. Econ.* 23 (1), 1–8. doi:10.32424/1.jame.2021.23.1.3856

Zahra, S. A. (2021). The resource-based view, resourcefulness, and resource management in startup firms: A proposed research agenda. *J. Manag.* 47, 1841–1860. doi:10.1177/01492063211018505