



The Impact of Digital Financial Capability on Digital Financial Consumer Behavior: Moderating Role of Perceived Risk in the Pakistani Banking Sector

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ABSTRACT

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The new era of financial industry digitization has irreparably transformed the consumer behaviour in seeking the banking services, though it has not as yet penetrated in such a large scale in some of the emerging economies such as Pakistan. The paper covers how Digital Financial Capability (DFC) and its sub-dimensions (including digital financial literacy, digital financial satisfaction, and socialization) affect Digital Financial Consumer Behavior (DFCB) and how Perceived Risk (PR) mediates these relationships. With the application of Partial Least Squares Structural Equation Modeling (PLS-SEM), the analysis, which is realized through a cross-sectional survey of 400 users of digital banking in Punjab, Pakistan, yields the fact that all three dimensions of DFC have significant and positive influences on DFCB. Higher PR however moderates such associations which indicate that even those who are socially supported and informed may not utilize the digital financial services on the premise that they are risky. The results provide viable recommendations to banks, fin tech providers and policymakers to make linkages between consumer empowerment and the trust building programs. The investigation can be useful to the current academic knowledge about the adoption of fintech as it reveals what limits the behavioral consequences that occur with the emergence of digital financial readiness in the new economies because of the perceived risk.

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1.0 Introduction

The modern global financial environment has been radically reorganized due to the active development of digital technologies and triggered the emergence of financial technology (fintech). Mobile banking, online payment gateways, robo-advisory, and digital wallets have recently emerged as new innovations in the concepts of consumer interaction with financial institutions (Gomber et al., 2018). The importance of digital financial services is seen not only as a convenient tool of financial transactions but an essential process of financial inclusion in most of the developing economies, such as in Pakistan (Giglio, F. 2021). Despite the notable growth of digital financial services in a country triggered by the efforts of the government through several initiatives, including Raast and the Roshan Digital Account, and the high investment into digital infrastructure, the degree of their uniform adoption across the population remains inconsistent (Ahmad et al., 2021; Shaikh et al., 2023).

This gap shows that Digital Financial Capability (DFC) is critical in determining consumer behavior. DFC means the ability of an individual to understand, estimate and utilize digital financial services in a productive manner (Pazarbasioglu et al., 2020). Unlike undeveloped basic awareness, DFC covers the actually accomplished ability to effectively use digital financial environments, and social and cultural financial training determination. It can be described as multidimensional construct traditionally split into three key dimensions based on Digital Financial Literacy (DFL), Digital Financial Satisfaction (DFS), and Digital Financial Socialization (DFSO) (Setiawan et al., 2022; Lusardi & Mitchell, 2014).

Digital Financial Literacy (DFL) is the process of gaining, understanding and using financial knowledge in digital context. It encompassed skills relating to mobile banking app navigation, finding a safe platform, reading digital transactional statements, and detecting frauds online (Kumar et al., 2023, Ardini et al., 2024). The empirical evidence proved that DFL significantly advances digital engagement, especially in low-accessibility groups of the population undergoing few traditional banking systems (Setiawan et al., 2022).

Digital Financial Satisfaction (DFS) is a measure of the extent to which one feels confident, independent and satisfied with the digital financial interactions. As empirical evidence showed, high DFS is intertwined with reusing the platform, retaining, and evaluating providers of digital finance positively (Chen & Jiang, 2022; Duc et al., 2024). Acquiring more defined intention to continue use, users achieve a greater understanding of the limitations of digital banking, such as online instruments perceived as transparent, secure, and convenient (Jangir et al., 2022).

Digital Financial Socialization (DFSO) refers to the process in which financial attitudes and behavior is obtained through interactions with proximal agents such as family, peers and media. In an online environment, social influence attains an even greater level of importance due to online communities, peer sharing platforms, and social media platforms (Khan & Surisetti, 2020; Vosylis & Erentaitre, 2020). Researchers proved that DFSO plays a central role in shaping the development of trust and behavioral intention among the uncertain and first-time users of digital financial services (Zhao & Zhang, 2020).

In spite of this behavioral change due to digital capabilities, the switch between capacity

and action is not always linear. One of these intervening variables is perceived Risk (PR) which refers to worries about privacy breech, concerns about transaction error, identity theft, and system failure. Members of the most competent users can still avoid using digital financial tools in the state where the perceived level of risk (associated with the use of such tools) is high (Ali et al., 2021; Gani, 2022). Such concerns are more prominent in Pakistan where cases of digital fraudulence are common place and the protection of consumers is relatively weak, especially those residing near urban centers and rural areas (Song & Yan, 2023). The current research draws on the protection motivation theory (PMT; Rogers 1983, 1995) as its theoretical underpinning and argues that the relationship between digital financial capability (DFC) and digital financial consumer behavior (DFCB) is moderated by the perceived risks. To be more precise, there is an argument that despite the high rates of digital literacy, satisfaction with the technological environment, or the abundance of social support, people might not want to use fintech services when they feel that the risks associated with this process exceed the possible benefits (Sudarsono et al. 2021).

2.0 Literature Review

Increased digital technologies in the current financial services have given rise to meaningful studies in the academical discipline to predict determinants of consumer behavior in digital financial ecosystems. The term around which this discourse revolves is the concept of Digital Financial Capability (DFC) which constitutes a multidimensional concept comprising the knowledge, skills, attitudes, and behaviors required to use digital financial tools (Vieira et al., 2024; Setiawan et al., 2022). With the establishment of more digital platforms and the replacement of traditional banking methods with digital ones, the ability of consumers to navigate and utilize such platforms has proven to be critical to financial inclusion as well as empowerment, particularly in developing economies like Pakistan (Shaikh et al., 2023; Giglio, F. 2021).

The current literature points out the existence of three main dimensions of DFC including digital financial literacy (DFL), digital financial satisfaction (DFS), and digital financial socialization (DFSO) that have different impacts on consumer behavior. DFL provides knowledge and practical skills of basic security and effective use of the platform (Lusardi & Mitchell, 2014; Kumar et al., 2023). The DFS measures the emotional analysis and trust of users to digital services, thus impacting their further use (Chen & Jiang, 2022; Duc et al., 2024). DFSO mirrors the impacts of social actors of attitudes and intentions to adopt digital financial services (i.e., family, peers, and media) (Khan & Surisetti, 2020; Vosylis & Erentait jobs; e, 2020). However, the process of capability to behavior translation is not direct as there are many intervening variables, among which is Perceived Risk (PR), including issues of privacy, fraud, and errors in the transactions, which can greatly mediate the connection between ability and use (Ali et al., 2021; Gani, 2022). Understanding therefore, the interaction between the dimensions of DFC and PR is critical in trends that can include, secure, and consumer-trusted digital financial systems in emerging markets.

Digital Financial Capability and Digital Financial Consumer Behavior

Digital Financial Literacy (DFL) is the ability to develop rational financial decisions with the use of digital interface. In the literature, the DFL promotes the management of account, product

assessment, and management of full control of the expenses contributing to an improvement in relations with digital banking services. Setiawan et al. (2022) and Munawar (2023) confirmed that DFL can have positive effects on the saving behavior, spending and investment behavior and those effects are stronger in the case of millennials in Pakistan. Kumar et al. (2023) also noted that DFL also diminishes financial mistakes, reinforces the decision-making ability, and promotes secure and lucrative financial performance. In line with these facts, studies in Pakistan, Kuwait, and Indonesia confirm the strong association between DFL and digital financial behavior, indicating that the most literate clients are more likely than the other consumers to adopt and to be satisfied with the financial technology services.

Digital Financial Satisfaction (DFS) refers to how the customers declare their satisfaction with observing digital financial services and intervening with them. It includes analyses of the quality of services, ease of transactions, safety, transparency of prices and the reliability of the platform. The empirical evidence suggested that increased DFS creates long term usage, fosters loyalty, and drives advocacy. The available review proved that high DFS improves consumer confidence, removes inflexibility of money, and encourages long-term financial planning. Duc et al. (2024) and Chen and Jiang (2022) also indicated that financial well-being is closely related to consumers being satisfied with cashless transactions and doing online purchasing and that it significantly improves the chance of consumers returning to using digital space.

Digital Financial Socialization (DFSO) refers to processes by which individuals learn digital financial action, values, and understanding in the society through other entities in the society, i.e., social agents of socialization (parents, peers, educators, and media on the one hand, and workplace networks on the other hand). There is evidence suggesting that family and peer effects are critical in defining financial behavior of an individual especially with regards to the tools of identifying the adoption of digital banking (Khan & Surisetti, 2020).

Similarly, modeling of parents and frequent financial conversation when a child is young are interconnected with a higher degree of financial well-being and the encouraging of building sufficient digital financial practices throughout adulthood. Both empirical evidence in Pakistan (Qamar et al., 2023) and in a variety of global settings, such as (Vosylis & Erentait 2020), support the conclusion that DFSO can improve digital financial preparedness and capacity, which eventually encourages consumers to use and adopt Fintech solutions with no hesitation.

Perceived Risk as moderator between Digital Financial Capability and Digital Financial Consumer Behavior

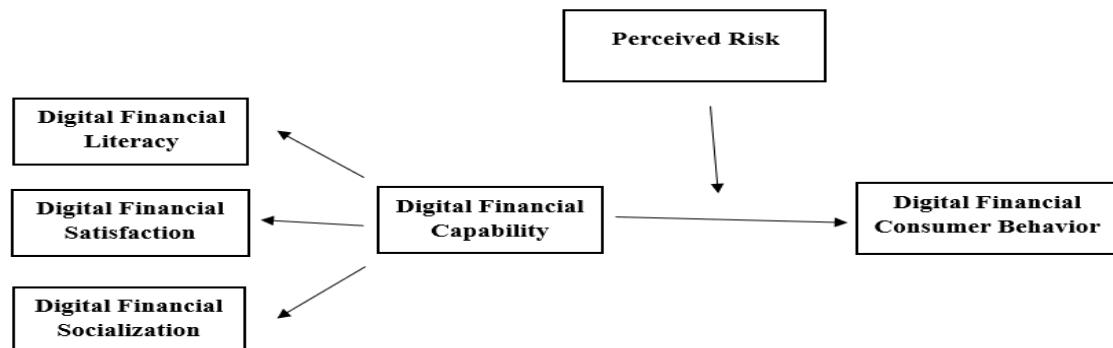
Perceived Risk (PR) means consumer fear of losing money, getting ripped off, violating their privacy, or inability with digital services. A significant level of perceived risk is also able to push away users in possession of digital literacy who might otherwise be interested to utilize or use the fintech services. This study showed that perceived risk is a psychological barrier that reduced the influence of DFL on real behavior of usage. This premise is supported by empirical observations of M.A. Ali et al. (2021) and Song et al. (2023), who revealed that one of the aspects of perceived risk modification interactions between financial literacy and consumer behavior introduces an element of uncertainty and fear of loss. To support the above-presented conclusions,

Gani (2022) and Kaur & Arora (2020) stated that high perceived risk is something that can supersede confidence that is based on literacy and enable the consumer who meets the necessary capabilities to reject digital services.

The concept of satisfaction is often mentioned as one of the determinants of repeat use of digital platforms; however, perceived risk may reduce the positive impact of satisfaction. Moderation hypothesis argued that the effect of satisfaction on the behavior of the consumer becomes low when there are high risks. Obaid, T. (2021) and Noureldin and Moawad (2023) who conduct empirical studies proved that the consumer might lose a platform after having an enjoyable interaction when they feel there is insecurity in the transactions or a breach of privacy. Jangir et al. (2022) also verified that perceived risk moderates the continuance intentions during satisfaction and confirmation.

Socialization is a characteristic method in which people learn some fundamental attitudes and rules. However, sense of risk may make a disparity between intention and act a psychological one. Social factors can encourage potential users to learn more about digital finance, but the same users will eventually avoid their participation in case they perceive the sphere as not secure (Arcot et al., 2024). The observations made by the empirical studies as mentioned in the literature indicate that the encouragement of family members or the influence of peers is not enough to be transgressed into visible behavior until and unless threats of safety and security have been addressed (Dahal, 2024). Digital socialization can therefore be of interest but at the same time the public relation activities can be of hesitancy or rejection when it comes to giving it a go (Özgen & Saydam, 2022). The current trend is consistent with the Protection Motivation Theory as suggested by Rogers (1983) that exposure to threats can weaken the drive to engage in a protective behavior, despite the enabling social influences.

2.1 Theoretical Framework



3.0 Methodology

The current study was a quantitative, cross-sectional study that aimed to explore how digital financial capability influences the digital financial consumer behavior, and the perceived risk was used as a moderator. In order to test hypothesized relationships, primary data on an individual user of digital banking services in various regions of the Punjab province of Pakistan were gathered. The selected sample size was about 400 respondents, which is satisfactory as going by the book of Comrey and Lee (2013), the minimum size required to conduct a factor analysis

and structural equation modeling is 300 and the rating of 400 by Comrey and Lee is good. Hair et al. (2019) agrees, stating that in a model with multiple constructs and directions, a sample size between 300 and 500 complies with the appropriate statistical power of SEM and moderation analysis. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used in the Smart PLS 4.0 as the primary strategy of analysis after data cleaning and screening.

The current research utilized a standardized questionnaire that was developed based on established scales found in the existing research that had been validated. The questionnaire was divided into five major parts, Digital Financial Literacy – Adapted from Setiawan et al. (2022), measuring knowledge, understanding, and application of digital financial tools. Digital Financial Satisfaction – Derived from studies by Duc et al. (2024) and Chen et al. (2023), assessing users' emotional and cognitive evaluations of their digital financial experiences. Digital Financial Socialization – Based on measures by Khan & Surisetti (2020), capturing influence from family, peers, and media. Digital Financial Consumer Behavior – Adopted from Alaeddin, O., Altounjy, R., Zainudin, Z., & Kamarudin, F. (2018) capturing FinTech behavior models to assess usage and adoption. While, Perceived Risk – Adapted from Ali et al. (2021), including items on perceived security, fraud risk, and privacy concerns.

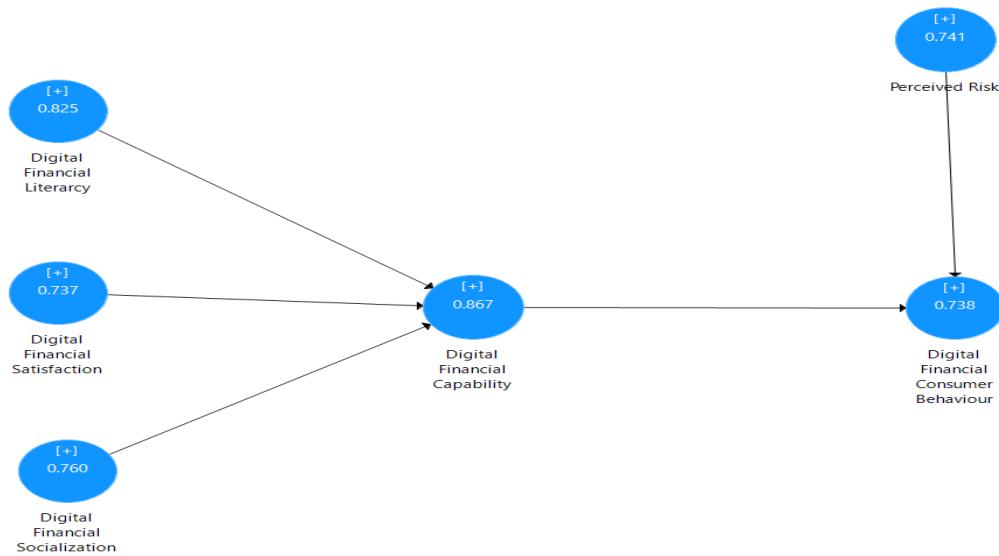
4.0 Findings and Results

4.1 Reliability Analysis:

The reliability test showed that all constructs had a reasonable internal consistency and convergent validity. The Cronbach Alpha values were between 0.7375 and 0.8673, which is over the widely accepted 0.70, hence good reliability. The values of the Composite Reliability (CR) of all variables were within the range of 0.7999-0.8974, which indicates the construct reliability. Moreover, the scores of Average Variance Extracted (AVE) were more than 0.50, which is the minimal requirement, and varied between 0.5058 and 0.5974, which ensured the sufficient convergent validity. Collectively, the indicators confirm the reliability and validity of the measurement model in further structural analysis.

Table 4.1: Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
DFC	0.8673	0.8889	0.8974	0.5058
DFCB	0.7379	0.7671	0.7999	0.5131
DFL	0.8251	0.8826	0.8271	0.5369
DFS	0.7375	0.7863	0.802	0.5974
DFS	0.7598	0.8468	0.8266	0.5427

Figure 4.1: Reliability Analysis

4.2 Validity Analysis

The validity table shows the inter-construct correlations that helped to indicate discriminant validity. It can be concluded based on the values of correlation that several constructs- Digital Financial Literacy (DFL) and Digital Financial Consumer Behavior (DFCB)- with correlation of 0.7533, Digital Financial Satisfaction (DFSA) and Perceived Risk (PR) of 0.7771- have relatively high inter-correlations, thus they may overlap. However, the majority of the correlations are less than 0.80 meaning that there is a satisfactory degree of distinctiveness between constructs. Accordingly, the constructs are interconnected but not redundant, thus promoting discriminant validity in the model in general.

Table 4.2: Validity Analysis (HTMT)

	DFC	DFCB	DFL	DFSA	DFSO	PR
DFC						
DFCB		0.5181				
DFL		0.6105	0.7533			
DFS		0.3682	0.6595	0.4178		
DFS		0.3861	0.6409	0.6648	0.4522	
DFC	0.5508	0.5919	0.4801	0.7771	0.6322	

4.3 Direct and Moderating Effect

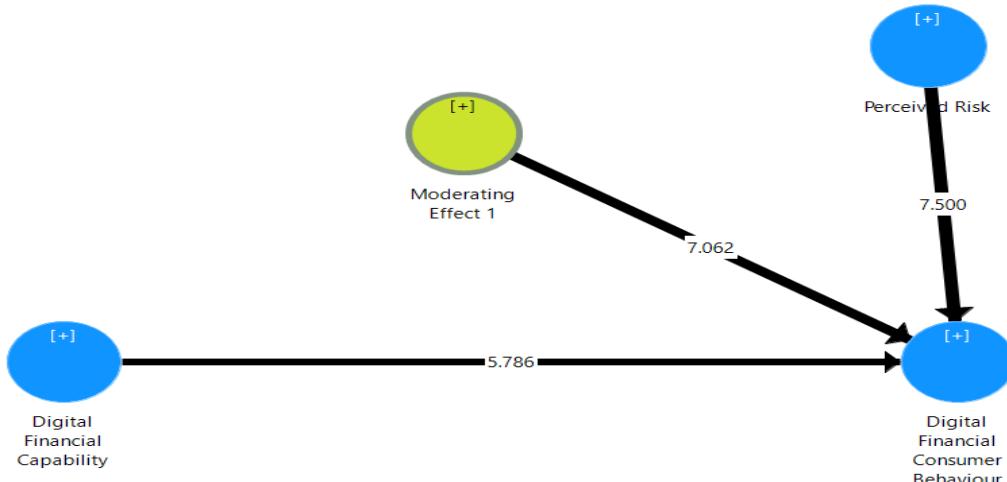
Multiple statistically significant relationships were obtained in the direct and moderating effects table. Evidence suggests that Digital Financial Capability (DFC) has a positive and significant direct influence on Digital Financial Consumer Behavior (DFCB) ($B = 0.1953$, $p = 0.0002$, $t = 5.7861$), meaning that people with greater DFC practice more proactive digital financial behaviors. Perceived Risk (PR) was found to have a significant negative direct effect on DFCB ($\beta = -0.3514$, $p = 0.0000$, $t = 7.5001$), which implies that the higher the risk perceived by a consumer the less likely they are to engage in digital finance. Also, the outcome indicated that PR

moderated the correlation between DFC and DFCB, and the moderation is negative and significant ($\beta = -0.0941$, $p = 0.0000$, $t = 7.0624$). Thus, the perceived risk will reduce the positive effects of DFC on consumer behavior, highlighting the perceived risk as a very crucial barrier to adoption and success of digital financial tools.

Table 4.3: Direct and Moderating Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Digital Financial Capability -> Digital Financial Consumer Behavior	0.1953	0.2212	0.0338	5.7861	0.0002
Moderating Effect 1 -> Digital Financial Consumer Behavior	-0.0941	-0.0861	0.0133	7.0624	0
Perceived Risk -> Digital Financial Consumer Behavior	-0.3514	-0.3473	0.0469	7.5001	0

Figure 4.2 PLS SEM Results



5.0 Discussion

The current study confirmed the claim that digital financial enablers are critical in the determination of Digital Financial Consumer Behavior (DFCB). In particular, Digital Financial Capability (DFC) showed a large, statistically significant, and positive impact on DFCB (0.1953, $p < 0.001$) which implied that the more a person is capable, the more confident and active they are in the use of digital financial services. The finding is in line with Capability Approach, which stipulates that financial knowledge and skills enable people to make meaningful financial decisions (Setiawan et al., 2022). In line with previous literature by Setiawan et al. (2022) and Munawar (2023), the correlation showed that able users are even better at handling digital accounts,

preventing fraud and conducting online payments. DFC is therefore a key actor of active involvement in digital finance.

In contrast, it is confirmed by the analysis that Perceived Risk (PR) has a strong negative direct impact on DFCB (0.3514, $p < 0.001$), which means that the concern by the users of the fraud and data breaches, as well as the possibility of losing money will restrain their participation in digital financial services. This observation is consistent with other researchers like Gani (2022) and Jangir et al. (2022) because they insisted that high perceived risk hurts user trust and weakens adoption intentions. Regardless of the digital capability or financial satisfaction of the given population, the issue of platform security may trigger reluctance or refusal to use digital banking, especially in the developing countries like Pakistan, where consumer protection systems may be believed to be weak.

It is important to note that PR also has a significant moderating effect on the relationship between DFC and DFCB ($b = -0.0941$, $p < 0.001$), which demonstrates that users who have a strong digital capability might avoid the use of digital financial platforms in case they believe that such platforms are unsafe. This finding is consistent with Protection Motivation Theory, which assumes that the risk of financial fraud or privacy abuse can overcome action regardless of its effectiveness (Ali et al., 2021). These findings are similar to those by Gani (2022) and Vosylis & Erentait (2020) who underscore that perceived risk may override beneficial social or cognitive motivators of behavior. Therefore, financial institutions and regulators have the responsibility to not only promote a digital financial ability but also to combat risk perceptions among consumers by practicing transparency, sound cybersecurity, and effective communication of risks.

6.0 Conclusion

The research examined the role of digital financial capability, which includes digital financial literacy, satisfaction and socialization, in digital financial consumer behavior in the Pakistani banking sector. Empirical evidence confirmed the existence of the strong, positive impacts that financial capability has on the behavior, showing that informed, confident, and socially supported consumers are significantly more likely to adopt and maintain the use of digital financial services. However, perceived risk came out as a strong negative moderator in relation with digital financial capability. Consumers also tend to use digital platforms less when they feel that the threats are high, even in cases where they report high capability levels, e.g. possibility of being defrauded, identity theft or data breaches.

Theoretically, the study can contribute to the literature on fintech adoption because it unveils the contingent nature of digital capability influence on consumer behavior. In practice, it warns that focusing only on capability improvement will only have a few returns unless there are simultaneous efforts aimed at reducing the risk. On this basis, the successful development of the digital banking environment in Pakistan requires the stakeholders to focus on the areas of consumer education, satisfaction, and trust building based on the thorough cybersecurity measures, effective grievance redress system, and open communication. Financial institutions can enhance the rate of transition to inclusive and sustainable digital finance by simultaneously covering both the capacity and perception of risk.

7.0 Implications, Limitations, and Future Research

The results of the present study provide valuable information to such stakeholders as banks, fintech organizations, and policy makers working in emerging economies. In particular, the research shows that by increasing the digital financial capability (through specific literacy programs and satisfaction-driven platform design), it is possible to significantly enhance the interest that consumers have in digital finance. However, this development should be accompanied by sound risk-reduction measures to inculcate consumer confidence. Limitation of the study is worth consideration including cross-sectional design and the limitation to a single province (Punjab), which can be limiting factors of the external validity of the findings in larger populations and over time. New studies may follow a longitudinal design, explore regional and demographic differences, or apply other moderators, including digital trust or government regulation. Expanding the model to the behavioral intention or financial well-being as the outcomes may further enlighten the dynamics of the digital consumer behavior.

Muhammad Ahmar Jamshaid: Problem Identification and Theoretical Framework

Ahmad Saeed: Data Analysis, Supervision and Drafting

Khushhal Mehmood: Methodology and Revision

Conflict of Interests/Disclosures

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