





# “Measuring factors affecting consumer attitudes toward metaverse adoption: Islamic banking services setting”

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# MEASURING FACTORS AFFECTING CONSUMER ATTITUDES TOWARD METAVERSE ADOPTION: ISLAMIC BANKING SERVICES SETTING

## Abstract

Adopting metaverse technology in the banking sector is generating considerable interest. Investigating customers' behavior is considered a primary element in adopting metaverse technologies in banking settings. This study combines the Trust Theoretic Model, Task-Technology Fit Model, and theory of planned behavior to explore consumers' intentions to adopt metaverse Islamic mobile banking services in Jordan. Based on the Structural Equation Modeling (SEM) approach, the results using an electronic survey of 391 metaverse consumers among metaverse Islamic mobile banking services show that consumer trust based on its priors (perceived risk, perceived reputation, service quality, and perceived regulatory support) has a significant influence on consumer behavior intention at a significant P-value level ( $< 0.001$ ). Furthermore, the results affirm that Task-Technology Fit plays a significant role in consumer behavior intention at a significant P-value level ( $< 0.001$ ). Moreover, consumer behavior intention has a significant influence on consumers' decision to adopt metaverse Islamic mobile banking services in Jordan at a significant P-value level ( $< 0.001$ ). The findings of this study present critical insights for Islamic bank management in Jordan, assisting in developing their metaverse Islamic mobile banking, maintaining a strong relationship with consumers, and fostering consumer experiences. This study highlights the significance of adopting metaverse technologies in Islamic mobile banking services.

## Keywords

metaverse, Islamic banks, trust theoretic model, task-technology fit model, behavioral intention, adoption, theory of planned behavior

## JEL Classification

L86, M15, L84

## INTRODUCTION

Recently, the banking sector has made every effort to develop its mobile services based on the introduction of new digital transformation technologies such as cloud technologies, blockchain, artificial intelligence, metaverse, and others. Adopting metaverse mobile services has been considered an orientation of banking domains to add value to their practices (Hidayat & Kassim, 2023). Metaverse technology provides an alternative approach to redesigning and restructuring banking practices, targeting enhancing business processes, reinforcing banking services and products, and establishing vigorous relationships with banking consumers (Özkaynar, 2022). Despite the barriers to metaverse adoption, top managements of banks have endeavored to strongly locate in the market by raising their competitive advantages based on adopting modern technologies such as metaverse (Kunhibava et al., 2023).

Customer behavior in digital environments is a critical resource for emerging businesses, especially in the rapidly growing digital banking space in Jordan. The rapid growth of information technology industries has affected customers' behavior and changed their requirements

and tendencies, forcing banks to align their views with technology environment changes (Yaseen et al., 2022). Practically, it has been realized that determining the factors influencing customer behavior of using a new phenomenon technology is considered a pioneer key to adoption success as customers' behaviors are considered a big challenge for adopting metaverse technologies (ShabbiraHusain et al., 2024). However, there is a big demand in the existing literature to identify factors affecting customers' acceptance of using metaverse Islamic mobile banking services, particularly in developing nations such as Jordan. Lastly, providing a comprehensive overview regarding adopting processes of metaverse mobile banking services assists bank management in understanding the competition in the banking services market and determining consumers' needs.

## 1. LITERATURE REVIEW

The concept of metaverse comes from the combination of “*meta*” and “*universe*” words that provide its capabilities through a three-dimensional virtual domain (Weinberger, 2022). In this context, the science of the metaverse has introduced its services based on a virtual world environment where avatars and immersive technologies play a critical role in participating in various fields such as banking, economics, marketing, etc. (Kim & Yoo, 2024). Moreover, consumers can perform their practices based on metaverse platforms, including immersive, augmented and virtual reality, and virtual worlds making consumers' journeys more attractive in the metaverse (Tan et al., 2023). However, the metaverse technology provides a novel interaction for users and organizations via an extensive scale of applications, comprising virtual commerce and business, virtual education, virtual banking services, and finance technology services (Wang et al., 2021; Alshuryfeen et al., 2024). The metaverse supports various features such “*self*,” “*social*,” “*immersive*,” “*anywhere*,” “*diverse*,” “*economics*,” and “*civilization*,” targeting at establishing a smooth connection between virtual and real worlds (Buhalis et al., 2022). Therefore, banking services based on metaverse technology enable consumers to obtain various advantages such as meeting financial experts virtually to achieve their financial purposes, planning for budgeting, enhancing future investment, and making the right decisions regarding financial matters (Nguyen et al., 2023).

Banking environments, including the Islamic sectors, have often worked to reinforce customers' experiences by adopting digital transformation technologies regarding their banking services (Alshurafat et al., 2024). Banking services

based on digital transformation technologies can enable consumers to interact with their financial products and services in real execution time (Bhattacharya & Singla, 2024). In addition to that, the advancements in virtual and augmented reality, blockchain applications, and artificial intelligence tools have offered customers immersive and three-dimensional experiences of banking services that reinforce customers' journey and strong relationships while performing their banking and financial services (Adke et al., 2024; Mohamed & Faisal, 2024). In this setting, blockchain technology as a primary element of the metaverse technology offers various attributes for banking services in a virtual world environment such as a high degree of transaction security, decentralization, immutable, distributed ledger architecture, and group consensus approach that strengthens a trusted infrastructure for digital and virtual of banking services (Chang et al., 2021). Moreover, artificial intelligence is considered a crucial technology of the metaverse technology, offering banking services for various alternatives (robotics, chatbots, and virtual) to add value to customers' knowledge and experiences in the virtual platform (Duan et al., 2021). Artificial intelligence applications can create trusted, interacted, and engaged metaverse settings.

There is no doubt that a considerable number of Islamic banking services have recently been provided via various digital channels such as mobile applications and online settings. Nowadays, enhancing customers' immersive knowledge and experience is a required task for banks and the metaverse technology plays a critical role in this process (Cho, 2023; Nagy et al., 2024). Al-Afeef et al. (2024) indicated that integrating the metaverse applications among Islamic banking services has a significant influence on customers' trust, result-

ing in an enhanced brand image of Islamic banks regarding their products and services and reinforcing overall banks performance. The metaverse technology has favorable characteristics that allow banks to introduce their banking products and services to consumers in a better design and format (Khaliq & Manda, 2024). However, the metaverse technology establishes a virtual setting and a novel connection method between consumers and banks, expecting to increase the demand for metaverse adoption.

The trust theoretic framework for consumers' adoption of metaverse mobile banking services was initially suggested and confirmed by Chandra et al. (2010). The empirical confirmations regarding adopting technology fields indicated that employing a trust theoretic platform provides a considerable effect on consumers' trust of metaverse mobile banking services based on two worthy keys: features of mobile banking services provider and features of mobile banking technology environment (Amnas et al., 2023; Chandra et al., 2010). Based on these primary features, consumers' trust in using metaverse mobile banking services is influenced by four popular determinants – risk, reputation, service quality, and regulatory support (Chandra et al., 2010).

In the beginning, perceived risk is considered a critical determinant of consumers' trust in using metaverse mobile banking services that refers to customers' subjective evaluations of the potentially unfavorable outcomes regarding adopting metaverse mobile banking services (Chandra et al., 2010). It has been ensured that security interests, fraud types, and privacy issues are lustrous variables affecting perceived risk (Jangir et al., 2022). Therefore, it has been affirmed that a high rate of risk regarding metaverse mobile banking services provides a negative decision of customers' adopting or ongoing use (Sahoo & Ray, 2023). Perceived reputation is another influential variable affecting the usage of metaverse mobile banking services that is defined as consumers' beliefs and perspectives regarding their experiences of using metaverse mobile banking services or products (Chandra et al., 2010; Rumanto, 2024). Moreover, perceived reputation describes consumers' or possible consumers' perceptions toward the reliability and trustworthiness of metaverse mobile banking

services and Islamic banks (ShabbiraHusain et al., 2024). However, perceived reputation has exceedingly been researched among banking sectors, especially in Islamic domains to discover customers' behavior regarding adopting mobile banking services that invariably influences customer's decisions regarding mobile banking usage (Ahmad et al., 2024; Sofyani & Darma, 2024). It has been reported that a high-reputation degree of metaverse mobile banking services positively affects consumers' metaverse trust (Febriandika et al., 2024; Alkhatib et al., 2024).

Service quality in the setting of metaverse mobile banking services adoption is considered the most influential variable of customers' trust that describes the degree of excellence and reliability with the services offered by metaverse technology or metaverse provider (Amar et al., 2024; Wang et al., 2019). However, it has been acknowledged that the service quality of metaverse encompasses various determinates: metaverse reliability, metaverse responsiveness, metaverse security, and consumer support offered by metaverse technology (Nagy et al., 2024). Research on electronic banking services uncovered that service quality provides a considerable and positive impact on customers' trust (Alhanatleh, 2021; George, 2018). Service quality is influenced by various determinants of metaverse reliability such as time of operation, accuracy of transaction, and scalable overall performance which significantly affects consumers' trust in using metaverse mobile banking services (Liébana-Cabanillas et al. 2020). Perceived regulatory support in an environment of metaverse mobile banking services adoption is a primary factor of consumers' trust that explores consumers' perspectives and beliefs regarding the degree of metaverse support, metaverse guidance, and metaverse regulation offered by government management authorities or any relevant institutions (Vyas & Jain 2021). It has been indicated that a strong regulatory setting can support consumers with a high level of security while performing their practices based on metaverse mobile banking services (Remolina, 2024; Cantú et al., 2024). Therefore, when metaverse regulations are highly stable, consumers are more trusted to adopt metaverse mobile banking services. Consumers express their willingness to use or adopt metaverse mobile banking services since regulations take place to secure their private

interests such as privacy of data and information and banking transactions security (Aysan., 2024; Shaikh et al., 2023).

Trust has been modeled in various theories (such as co-creation value, loyalty, and various others) and technology domains (such as artificial intelligence, blockchain, banking services, and various others) to express consumers' attitudes and behaviors for accepting or adopting new technology (Gan & Lau, 2024; Alhanatleh et al., 2022, 2024). As a critical factor in the current research model, metaverse trust is defined as the degree of reliability, security, and integrity of metaverse mobile banking services offered by metaverse environment and provider of banks to consumers (Alkawasbeh et al., 2024). Therefore, it has been realized that high confidence can motivate consumers to execute their banking and financial practices based on metaverse technologies (Gupta et al., 2024). The reliability of metaverse mobile banking services and their providers is considered a major key to consumers' trust success. It encourages consumers to have a positive attitude toward adopting metaverse technologies in banking sectors (Hasani et al., 2024). In addition, security is another success key to establishing and fostering consumers' trust regarding adopting or using metaverse technologies in banks (Kumar & Shankar, 2024). Besides that, reliable communication via metaverse providers regarding metaverse mobile banking services concerning security activities and privacy policy can lead to an increase in consumers' trust rate and generate a positive impact on metaverse mobile banking services usage (Kilani et al., 2023). Other features such as word of mouth and rating can affect consumers' trust in metaverse technologies (Zarifis & Cheng, 2022).

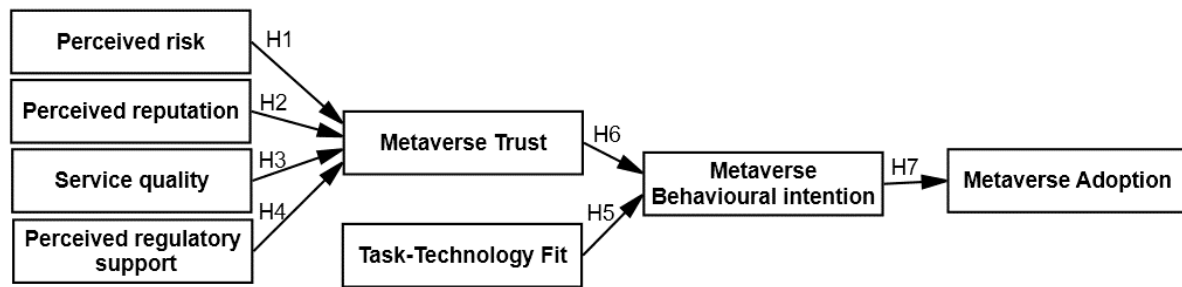
In addition to the role of the trust theoretic model on metaverse technology, the task-technology fit model suggests providing significant insights to explore consumers' behaviors and attitudes toward their experiences of using metaverse platforms in banking domains (Baxi et al., 2024). In the setting of this study, the task-technology fit model is a conceptual theory used to realize and understand how metaverse technology can be deployed among Islamic banks to execute a particular task or service (Goodhue & Thompson, 1995). To do so, Islamic bank managements should shift their strategies to obtain the best integration of tech-

nology infrastructure and information systems to precisely meet the demands of performing a specific task using metaverse environments (Nagadeepa et al., 2024; Wijayanti et al., 2024). The major key behind the task-technology fit framework is in the structure and design of metaverse technology that measures the capabilities of design and metaverse technology to achieve consumers' requirements to accomplish their tasks (Kim & Song, 2022).

Behavioral intention of using metaverse technology is defined as a consumer's willingness and tendency to engage in a particular behavior or attitude (Venkatesh et al., 2012). Ajzen (1991) theoretically established behavioral intention in the theory of planned behavior. The interplay between behavioral intention and technology adoption was widely examined in multiple settings, and behavioral intention is considered a primary key to predicate technology adoption (Akour et al., 2022). In a metaverse technology setting, behavioral intention has been approached to determine consumers' decision to adopt metaverse technology for performing their practices (Chinie et al., 2022). Nguyen et al. (2023) indicated that behavioral intention provides a strong and positive influence regarding adopting metaverse technology among banking sectors. It has been discovered that deploying metaverse technology among Islamic banks can generate business value, foster innovation and creativity, and enhance consumers' experiences (Alshurafat et al., 2024).

To sum up, the existing literature permanently emphasizes the critical role of metaverse technology in banking sectors to establish intimate relationships with customers. Searching for factors influencing customers' attitudes is considered a primary requirement to adopt metaverse technology in Islamic banking services. The empirical validations from Jordan match with outcomes from various developed and developing markets, indicating the role of metaverse technology adoption within Islamic banking services to serve banks' strategic goals and provide immersive experiences for customers.

As a result, this study endeavors to bridge the literature gap regarding customers' attitudes and behaviors toward adopting metaverse technologies in Islamic banks. To do so, the trust



**Figure 1.** Conceptual model of the study

theoretic framework, task-technology fit model, and theory of planned behavior have been employed to explore customers' perspectives on using metaverse Islamic mobile banking services in Jordan. Figure 1 shows the developed conceptual model of the present study, expecting to offer critical insights and understanding of the phenomenon of metaverse technology adoption among Islamic banks. Thus, to achieve the objectives of this study, the following hypotheses were conceptualized based on the above-mentioned literature:

- H1: Perceived Risk has a significant influence on Trust in using metaverse Islamic mobile banking services.*
- H2: Perceived Reputation has a significant influence on Trust in using metaverse Islamic mobile banking services.*
- H3: Service Quality has a significant influence on Trust in using metaverse Islamic mobile banking services.*
- H4: Perceived Regulatory Support has a significant influence on Trust in using metaverse Islamic mobile banking services.*
- H5: Trust has a significant influence on the behavioral intention of metaverse Islamic mobile banking services.*
- H6: Task-technology fit has a significant influence on the behavioral intention of metaverse Islamic mobile banking services.*
- H7: Behavioral intention has a significant influence on the adoption of metaverse Islamic mobile banking services.*

## 2. METHOD

This study employed a quantitative approach, utilizing survey techniques to achieve the major research objectives. Based on a quantitative methodology, the study instrument design, sampling approach, and data collection procedures were accurately evolved and implemented to measure the interactions between the factors of the proposed study model regarding metaverse technology adoption among Islamic banking sectors in Jordan. The research survey involved items that assist in estimating the rate of metaverse Islamic mobile banking services adoption from consumers' perspectives, admitting that this study is established, designed, and developed to provide prospective results based on the trust theoretic model and task-technology fit theory.

The instrument of this study was a survey approach that included well-justified constructs items based on a reliable literature review. Firstly, the trust theoretic model and its prior have been included in the research model based on 20 items. The antecedents of trust (perceived risk, perceived reputation, service quality, and perceived regulatory support) were adjusted and employed based on four items for each antecedent as confirmed by Amnas et al. (2023). Consumers' trust construct was adjusted and scaled based on four items as ensured by Alalwan et al. (2017). Secondly, the task-technology fit construct was adjusted and scaled based on four items as asserted by Wijayanti et al. (2024). Thirdly, consumers' behavioral intention was adjusted based on four items as confirmed by Venkatesh et al. (2012). Lastly, the metaverse adoption construct was adjusted and scaled based on four items as utilized by Ajzen (1991). For preparing the instrument to collect data processes, items of model constructs were assessed depending on

5-point Likert scale measurements that encode items from “1” meaning “*fully disagree*” to “5” meaning “*fully agree*.”

The population of this study was customers who utilize Islamic metaverse mobile banking services in Jordan to conduct their routine banking and financial services. To determine the required sample size for evaluating the adoption level of Islamic metaverse mobile banking services in Jordan among consumers, at least 385 consumers should be surveyed as suggested by Morgan (1996). In terms of selecting the sample from the target population for this study, Cohen et al. (2017) affirmed that the convenience-sampling mechanism is adequate to produce the goals and purposes of this study that the convenience approach can represent the target population. Due to the nature of this study population, the construct items of the instrument were translated into Arabic by asking four experts in linguistic scope. As a critical process of instrument reliability, the pilot study was conducted by inviting 25 consumers who use Islamic metaverse mobile banking services. The primary outcome of this study is to reduce the syntax and meaning errors caused by the translation process. Therefore, the final version of the survey was generated to start with data collection processes.

To access the chosen sample, researchers of this study produced an electronic version using Google Form technology that provides various features regarding data collection procedures such as minimum cost, quick to retrieve the responses, and comfortable access to the target respondents (Mou et al., 2017). To perform the data collection processes, the e-survey link was submitted to 450 consumers of Islamic metaverse mobile banking services in Jordan, targeting offering their usage experiences. The number of retrieved responses was 417, while just 391 were valid to estimate the rate of metaverse adoption among Islamic banks in Jordan. However, Hair et al. (2019) ensured that 391 responses were statistically competent to conduct analysis procedures regarding this study. The data collection stage began on February 19, 2024, and took three weeks to finish.

Table 1 offers completed details of respondents' demographic features, comprising gender, age, income, education, and frequency of using mobile

banking services. Based on gender category, the retrieved data provide that 52.7% of participants are male and 47.3% are female. Relying on the age category, 5.4% of participants belong to the range 20 years or less, 32.2% belong to the range from 21 to 30 years, 39.1% belong to the range from 31 to 40 years, and 23.3% belong to the range 41 years or above. Based on the monthly income category, 34.3% of participants gained 500 JD or less, 40.7% gained from 501 to 1000 JD, 16.6% gained from 1,001 to 1,500 JD, and 8.4% gained 1,501 JD or above. Regarding the education category, 4.6% of participants have High school certifications or less, 62.9% have Bachelor certifications, and 32.5% have master's or PhD certifications. Lastly, 33.8% of participants use mobile banking services at least one time per month, 41.7% use mobile banking services at least two times per month, and 24.5% use mobile banking services at least three times per month.

**Table 1.** Demographic profile of respondents

Characteristics	Category	Frequency	Percentage
Gender	Male	206	52.7
	Female	185	47.3
Age	≤ 20	21	5.4
	21-30 years	126	32.2
	31-40 years	153	39.1
	≥ 41	91	23.3
Monthly Income	≤ 500 JD	134	34.3
	501-1000 JD	159	40.7
	1,001-1,500 JD	65	16.6
	≥ 1501 JD	33	8.4
Education	High school or less	18	4.6
	Bachelor	246	62.9
	Postgraduates	127	32.5
Frequency of usage of mobile banking services per month	Once time	132	33.8
	Two times	163	41.7
	Three times and more	96	24.5

Note:  $N = 391$ .

### 3. RESULTS

Utilizing SPSS-AMOS version 22, the processes of the analysis stage were divided into two fundamental measurements, Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM), targeting reporting the results regarding the purposes of this study. Ringle et al. (2020) affirmed that accomplishing CFA and SEM measurements based on AMOS V.22 can produce

reliable outcomes, especially in multi-construct models like the current study. To confirm the present study results, various scientific mechanisms were approached based on statistical constraints and equations as indicated by Byrne (2013). Firstly, SPSS software was used to prepare the data set based on statistical techniques (coding, unengaged values, outliers, and missing values). Secondly, AMOS V.22 was used to conclude the results based on CFA and SEM assessments.

As a first process in the analysis stage, checking the validity and reliability of the developed model regarding Islamic metaverse mobile banking services requires measurements that are achieved through accomplishing three major statistical assessments: the convergent validity, construct validity, and discriminant validity as robustly affirmed by Awang (2014). To confirm that, various procedures and statistical approaches were sequentially fulfilled to provide authoritative outcomes regarding the validity and reliability measurements of this study model. Firstly, all constructs' items were subjected to a one-pool CFA mechanism, purposing to affirm two primary procedures which are the factor loading and covariance correlation based on their cut-off values ( $\geq 0.50$  and  $\leq 0.85$ ), respectively, as proposed by Raza and Awang (2021). To confirm the required values of factor loading items and covariance correlation between constructs model, the modification indices approach was implemented. Therefore, the adequacy of model fit measurements of this study model was established by calculating the model fit indicators based on their threshold values as suggested by Talwar et al. (2019). Table 2 provides the results regarding this model fit measurement as indices strongly confirm positive evidence of the adequacy of this study's model fit assessments.

After providing a significant verification of model fit indices, the one-pool CFA measurements computed two major categorizations of reliability and validity of the constructs model. The first measurement is convergent validity which can be evaluated based on factor loading and Average Variance extracted (AVE) assessments as their required values ( $\geq 0.50$ ), as proposed by Hermida (2015). The second measurement is the construct's reliability which can be estimated based on composite reliability (CR) and Cronbach Alpha ( $\alpha$ ) assessments as their accepted values ( $\geq 0.70$ ), as affirmed by Brown (2015). Table 3 provides a compendium regarding the results of convergent validity and construct reliability. All statistical results regarding factor loading and AVE assessments provide significant indications that strongly support the convergent validity measurement of this study model. In addition, the results provide sufficient summary regarding assessments of CR and  $\alpha$  that mightily support the construct reliability measurement of this study model.

To provide a full perspective regarding the model verification, discriminant validity measurement should be estimated as ensured by Henseler et al. (2015). To evaluate the discriminant validity measurement regarding the metaverse adoption model in Islamic banks, Dijkstra and Henseler (2015) proposed an equation, claiming that when the square root values of AVEs regarding model constructs are greater than the absolute values of interior correlations, the discriminant validity assessment will be accomplished. Entailing this proposition, Table 4 clarifies the concluded outcomes regarding the discriminant validity of the metaverse adoption model, indicating that the computed values of  $\sqrt{AVEs}$  (In bold-font) > the computed values of  $|AVEs|$  regarding inside- correlations (In normal-font), which strongly affirms the discriminant validity assessment.

**Table 2.** Model fit assessment results

Indicators	Results	Decision	Accepted value
RMSEA	0.054	Ideal	RMSEA < 0.08.
GFI	0.874	Contented	GFI, AGFI, CFI, CFI, TLI, NFI > 0.85 <input type="checkbox"/> contented Or GFI, AGFI, CFI, CFI, TLI, NFI > 0.90 <input type="checkbox"/> ideal
AGFI	0.856	Contented	
CFI	0.935	Ideal	
TLI	0.925	Ideal	
NFI	0.888	contented	
ChiSq/df	2.210	Ideal	Chi-Square/df < 5 <input type="checkbox"/> contented, Or Chi-Square/df < 3 <input type="checkbox"/> ideal



**Table 3.** Convergent validity and construct reliability outcomes

Constructs	Coding Items	Convergent validity measurements		Construct reliability measurements	
		Loading Factor values	AVE	$\alpha$	CR
Perceived Risk	Ri-1	.685	.590	.846	.851
	Ri-2	.790			
	Ri-3	.770			
	Ri-4	.821			
Perceived Reputation	Ru-1	.758	.638	.871	.875
	Ru-2	.709			
	Ru-3	.867			
	Ru-4	.850			
Service Quality	Qu-1	.770	.534	.820	.821
	Qu-2	.712			
	Qu-3	.734			
	Qu-4	.706			
Perceived Regulatory Support	Su-1	.692	.598	.851	.855
	Su-2	.770			
	Su-3	.818			
	Su-4	.806			
Metaverse Trust	Tu-1	.618	.523	.811	.813
	Tu-2	.710			
	Tu-3	.767			
	Tu-4	.785			
Task-technology fit	Fi-1	.547	.601	.852	.854
	Fi-2	.859			
	Fi-3	.856			
	Fi-4	.796			
Behavioral intention	In-1	.784	.544	.817	.826
	In-2	.775			
	In-3	.723			
	In-4	.661			
Metaverse adoption	Ad-1	.793	.626	.866	.870
	Ad-2	.760			
	Ad-3	.815			
	Ad-4	.797			

**Table 4.** Discriminant validity outcomes

Model variables	1	2	3	4	5	6	7	8
Metaverse adoption	0.791	–	–	–	–	–	–	–
Perceived Risk	0.118	0.768	–	–	–	–	–	–
Perceived Reputation	0.054	0.724	0.799	–	–	–	–	–
Service Quality	–0.029	–0.004	–0.015	0.731	–	–	–	–
Perceived Regulatory Support	0.040	0.092	0.013	0.719	0.773	–	–	–
Metaverse Trust	0.047	0.705	0.748	0.006	0.148	0.723	–	–
Task-technology fit	0.771	0.063	0.067	0.041	0.079	0.012	0.775	–
Behavioral intention	0.646	0.105	0.060	0.085	0.091	0.070	0.721	0.737

Ensuring the model reliability and validity of this study was a required procedure to conduct the SEM approach, targeting providing the hypotheses results. The execution of SEM regarding the model of this study provides summary outcomes about the total impact of squared multiple correlations ( $R^2$ ) and the total effect of independent factors on dependent factors as Table 5 and Table 5

represent both of these results. The statistical test of  $R^2$  is utilized to explain the total effect of the exogenous variable on the endogenous variable as observed in Table 4. Firstly, the outcomes of this study clarify that the statistical calculation  $R^2$  of Trust is around 0.785, denoting that the exogenous factors (Perceived Risk provides, Perceived Reputation, Service Quality, and Perceived

**Table 5.** Results of squared multiple correlations ( $R^2$ )

Endogenous construct	$R^2$
Trust	0.785
Metaverse behavioral intention	0.787
Metaverse adoption	0.972

**Table 6.** SEM results of hypotheses regarding this study model

Research Hypotheses	$\beta$	S.E.	C.R.	P
Perceived Risk $\rightarrow$ Trust	.382	.043	8.793	***
Perceived Reputation $\rightarrow$ Trust	.355	.046	7.765	***
Service Quality $\rightarrow$ Trust	-.285	.045	-6.355	***
Perceived Regulatory Support $\rightarrow$ Trust	.387	.051	7.547	***
Trust $\rightarrow$ metaverse behavioral intention	.082	.024	3.363	***
Task-technology fit $\rightarrow$ metaverse behavioral intention	.536	.029	11.400	***
Metaverse behavioral intention $\rightarrow$ metaverse adoption	.684	.009	15.182	***

Note: Significant p-value: \* < 0.05, \*\* < 0.01, \*\*\* < 0.001.

Regulatory Support) interpret 78.5% of the total variance influence on Trust of using metaverse Islamic mobile banking services among consumers in Jordan. Furthermore, the results indicate that the statistical calculation  $R^2$  of metaverse behavioral intention is approximately 0.787, elucidating that the exogenous factors (Trust and Task-Technology-Fit) explain 78.7% of the total variance influence on metaverse behavioral intention of using metaverse Islamic mobile banking services among consumers in Jordan. Lastly, the outcomes uncover that the statistical calculation  $R^2$  of metaverse adoption is nearly 0.972. This indicates that the exogenous factor (consumers' behavioral intention) expounds 97.2% of the total variance influence on using metaverse Islamic mobile banking services among consumers in Jordan.

The execution of SEM also provided outcomes of hypotheses based on the path coefficient test regarding the developed model of this study as observed in Table 6. The results of SEM uncover that Perceived Risk has a positive and significant influence on Trust in using metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = 0.382^{***}$ ), resulting in  $H1$  being strongly confirmed. The SEM results also uncover that Perceived Reputation has a positive and significant impact on Trust in using metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = 0.355^{***}$ ), indicating that  $H2$  is robustly affirmed. In addition, the outcomes confirm that Service Quality has a significant role in Trust in

using metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = -0.285^{***}$ ), resulting in  $H3$  being ensured. Next, the results show that Perceived Regulatory Support confirms a positive and considerable effect on Trust in using metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = 0.387^{***}$ ), indicating that  $H4$  is mightily asserted.

Moreover, the results uncover that trust confirms a positive and significant role in behavioral intention of using metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = 0.082^{***}$ ), indicating that  $H5$  is affirmed as these statistical results are in accordance with prior empirical validations (Kilani et al., 2023). Consequently, this work suggests that supporting features of consumers' trust such as security of banking and financial information, high-quality processing of banking and financial transactions, and protection from forbidden access can enhance consumers' behavioral intention of using metaverse Islamic mobile banking services. Furthermore, the results emphasize that task-technology fit has a positive and considerable influence on behavioral intention of using metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = 0.536^{***}$ ), indicating that  $H6$  is robustly ensured. Finally, the results assert that Behavioral intention has a positive and considerable influence on the adoption of metaverse Islamic mobile banking services among consumers in Jordan ( $\beta = 0.684^{***}$ ), indicating that  $H7$  is mightily confirmed.

## 4. DISCUSSION

The results show that Perceived Risk has a positive influence on Trust in using metaverse Islamic mobile banking services among consumers in Jordan, where *H1* results are in line with previous confirmations (Sahoo & Ray, 2023). These results indicate that trust is highly increased since consumers have sufficient knowledge during their metaverse Islamic mobile banking services usage such as their potential errors of use, awareness of unauthorized access, realization regarding system failure and technical issues, and considerations about fraud risk. The results also uncover that Perceived Reputation has a positive and significant impact on the Trust in using metaverse Islamic mobile banking services among consumers in Jordan, where *H2* outcomes are under prior empirical studies (Febriandika et al., 2024; Alkhatib et al., 2024). These outcomes affirmed that the reputation of Islamic banks and metaverse providers plays a powerful role in reinforcing consumers' trust in using metaverse Islamic mobile banking services. Thus, Islamic banks in Jordan may concentrate on various characteristics to bolster their reputation in terms of metaverse services such as information privacy, security issues, service quality, and ability to deal with complaints. In addition, the outcomes confirm that Service Quality has a significant impact on Trust in using metaverse Islamic mobile banking services among consumers in Jordan, where *H3* statistical results are in line with previous validations in the relevant literature (Liébana-Cabanillas et al., 2020). Based on that, this study proposes that Jordanian Islamic banks and metaverse providers should take serious responsibility for offering high-quality metaverse services, handling inquiries and requests of consumers, presenting sufficient customer service support, and delivering effective metaverse mobile banking services. Next, the outcomes discover that Perceived Regulatory Support confirms a considerable effect on Trust in using metaverse Islamic mobile banking services among consumers, where *H4* statistical findings are in accordance with prior empirical confirmations (Aysan, 2024; Shaikh et al., 2023). These statistical outcomes indicate that consumers will be trusted in performing their banking and financial services using metaverse technology since public governments and Islamic bank managements in Jordan provide significant policies and

procedures to encourage consumers to adopt. As a result, launching various policies, initiatives, and campaigns regarding metaverse platforms can have a significant effect on consumers' trust and decision to adopt.

Moreover, the results uncover that Trust confirms a significant role in behavioral intention of using metaverse Islamic mobile banking services among consumers in Jordan, where *H5* statistical results are in accordance with prior empirical validations (Kilani et al., 2023). Consequently, this work suggests that supporting features of consumers' trust such as security of banking and financial information, high-quality processing of banking and financial transactions, and protection from forbidden access can enhance consumers' behavioral intention of using metaverse Islamic mobile banking services. Furthermore, the results emphasize that Task-technology fit has a considerable influence on behavioral intention of using metaverse Islamic mobile banking services among consumers in Jordan, where *H6* statistical findings are in line with previous empirical validations (Kim & Song, 2022). Based on that, a high degree of metaverse functions affirmatively affected consumers' behavioral intention of using metaverse technologies. Thus, fostering metaverse capabilities of banking and financial transactions ensures a positive attitude toward consumers' behavioral intention of using metaverse Islamic mobile banking services. Finally, the results assert that Behavioral intention has a considerable influence on the adoption of metaverse Islamic mobile banking services among consumers in Jordan, where *H7* statistical findings are in accordance with prior empirical validations (Nguyen et al., 2023). These findings explored that a high degree of consumers' behavioral intention positively affects consumers' decision to adopt metaverse technologies. Hence, Islamic banks in Jordan should realize that meeting consumers' needs and requirements of banking and financial services among metaverse technologies is a pivotal procedure to make consumers more engaged.

This study has critical limitations and future opportunities to conduct further work in the field of consumer behavior, metaverse technology, and Islamic bank settings. Firstly, employing various sampling methods techniques in future research

may provide reliable and accurate findings of this study model that offer a potential opportunity to generalize the findings of the proposed model. Furthermore, future works may include cybersecurity awareness in this study model that expects to influence consumers' behavior toward using metaverse technologies to accomplish their banking and financial services. In addition, bank type and provider name may moderate the trust and task features of metaverse services in the model of this study that has the potential to provide a critical understanding of consumers' behavior to adopt metaverse technologies. Moreover, time

series investigations are required to offer reliable outcomes regarding consumers' behaviors of adopting metaverse services of Islamic banks in Jordan. Lastly, future trends may explore the real effect of metaverse technologies from different perspectives such as establishing value co-creation for consumers and Islamic banks, reinforcing banking and financial services performance of Islamic banks, measuring consumers' net benefits of adopting metaverse platforms, enhancing immersive consumers' knowledge and experiences, and estimating the role of metaverse technologies in economic growth.

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## CONCLUSION

This work investigated the adoption of metaverse platforms by integrating the trust theoretic model, task-technology fit, and theory of planned behavior among Islamic mobile services in Jordan from the consumers' perspective. The results of this study allow us to broaden the existing body of knowledge regarding the adoption of metaverse Islamic mobile banking services. The findings confirmed that task-technology fit and trust based on its antecedents affirmed a considerable and positive role on behavioral intention, encouraging Islamic banks to adopt metaverse technologies among mobile banking services in Jordan. However, the results show that the adoption rate of metaverse Islamic mobile banking services in Jordan positively strengthens with highly knowledgeable consumers. The outcomes of this work suggest that developing metaverse environments in Jordanian Islamic banks will lead to an impact on consumers' behavioral intention by enhancing perceived risk, perceived reputation, service quality, and perceived regulatory support.

It was observed that redesigning and restructuring the tasks among metaverse Islamic banks can reinforce consumers' behavioral intention in Jordan to accomplish their banking and financial services. It was also revealed that bolstering consumers' behavioral intention plays a crucial role in influencing their decision to adopt metaverse Islamic mobile banking services. Therefore, offering metaverse Islamic mobile banking services in consonance with consumers' demands and future trends can enhance the positive attitude toward metaverse adoption. Finally, the overall findings of this study suggest that applying metaverse technologies among Islamic banks in Jordan offers several benefits suggesting a new business model regarding banking and financial services, supporting consumers' knowledge, providing an immersive experience, strengthening the bank's position in the recent competitive market, and estimating consumers' future trends.

## AUTHOR CONTRIBUTIONS

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