INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN ACCOUNTING, FINANCE AND MANAGEMENT SCIENCES

OPEN ACCESS JOURNAL

Vol 14, Issue 3, (2024) E-ISSN: 2225-8329

The Moderating Role of Cultural Factors in the Adoption of Mobile Banking in Jordan

Bara Waleed Rababa and Azwadi Ali

Accounting and Finance, Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Terengganu 21030, Malaysia

Email: P4587@pps.umt.edu.my, azwadi@umt.edu.my

To Link this Article: http://dx.doi.org/10.6007/IJARAFMS/v14-i3/22270 DOI:10.6007/IJARAFMS/v14-i3/22270

Published Online: 19 August 2024

Abstract

This study investigates the impact of cultural factors on mobile banking adoption in Jordan by integrating Hofstede's cultural dimensions with the Technology Acceptance Model (TAM). Using a quantitative approach with a sample of 437 respondents, the research examines how cultural values moderate the relationships between key TAM constructs and mobile banking adoption intentions. The findings confirm the significance of perceived usefulness, perceived ease of use, perceived risk, and social influence in predicting adoption intentions. Notably, cultural values significantly moderate the relationship between perceived usefulness and adoption intention, suggesting that strong cultural factors may diminish the importance of perceived usefulness in the Jordanian context. The study also reveals a significant mediating effect of perceived usefulness between perceived ease of use and adoption intention. These results contribute to the understanding of technology adoption in diverse cultural settings and provide insights for banks and policymakers in developing culturally sensitive strategies to promote mobile banking adoption in Jordan and similar cultural contexts. The research highlights the need for a nuanced approach to technology acceptance models in cross-cultural studies and offers directions for future research in this domain.

Keywords: Mobile Banking, Technology Acceptance Model, Cultural Dimensions, Jordan, Perceived Usefulness, Perceived Ease of Use, Social Influence, Perceived Risk, Cultural Moderation, Financial Technology Adoption.

Introduction

The advent of mobile technology has revolutionized the banking industry worldwide, offering unprecedented convenience and accessibility to financial services. Mobile banking, defined as the use of mobile devices to access banking networks and perform financial transactions, has emerged as a pivotal innovation in the financial sector (Shaikh & Karjaluoto, 2015). This technological advancement has not only transformed how banks operate but also how customers interact with their financial institutions.

In the context of Jordan, a country with a rapidly evolving digital landscape, mobile banking presents both opportunities and challenges. According to recent statistics, Jordan boasts a high mobile phone penetration rate, with 9 out of 10 people owning cell phones (Thakur & Han, 2021). Furthermore, Jordan ranks third among Arab states in social media engagement, with 95% of Jordanians owning mobile phones (Alzougool, 2018). This high level of mobile technology adoption provides a fertile ground for the growth of mobile banking services.

However, despite the widespread use of mobile technology, the adoption of mobile banking in Jordan has not kept pace with the country's technological readiness. This disparity raises important questions about the factors influencing the adoption of mobile banking services in the Jordanian context. While technological and economic factors play a role, there is growing recognition that cultural factors may significantly impact the acceptance and use of new financial technologies (Baptista & Oliveira, 2015).

The importance of understanding cultural influences on mobile banking adoption cannot be overstated. Jordan, like many countries in the Middle East, has a unique cultural landscape characterized by high power distance, collectivism, and uncertainty avoidance (Hofstede, 2007). These cultural dimensions may interact with technological factors to shape consumer behavior towards mobile banking in ways that differ from Western contexts where much of the existing research has been conducted.

This study aims to investigate the impact of cultural factors on mobile banking adoption in Jordan. By integrating cultural dimensions into established technology acceptance models, we seek to provide a more comprehensive understanding of the drivers and barriers to mobile banking adoption in the Jordanian context. Specifically, this research addresses the following questions:

1. How do Hofstede's cultural dimensions influence the adoption of mobile banking in Jordan?
2. To what extent do cultural factors moderate the relationships between traditional technology acceptance factors (such as perceived usefulness and perceived ease of use) and the intention to use mobile banking?
3. What are the implications of cultural influences on mobile banking adoption for banks and policymakers in Jordan?

The significance of this study lies in its potential to bridge the gap between technological readiness and actual adoption of mobile banking services in Jordan. By elucidating the role of cultural factors, this research can inform more culturally sensitive strategies for promoting mobile banking adoption. For banks, understanding these cultural nuances can lead to more effective marketing and user experience design. For policymakers, insights from this study can guide the development of regulations and initiatives that align with cultural values while promoting financial inclusion through mobile banking.

Moreover, this research contributes to the broader literature on technology adoption in diverse cultural contexts. While numerous studies have examined mobile banking adoption, few have focused on the Middle Eastern context, and fewer still have deeply explored the role of cultural factors. This study aims to fill this gap, offering insights that may be applicable to other countries with similar cultural profiles.

The remainder of this paper is structured as follows: The next section provides a comprehensive literature review, examining existing research on mobile banking adoption, technology acceptance models, and the role of culture in technology adoption. This is followed by the theoretical framework and hypotheses development, methodology, results, discussion, and conclusion. Through this structured approach, we aim to provide a thorough examination of the cultural factors influencing mobile banking adoption in Jordan, contributing both to academic understanding and practical application in the field of financial technology adoption.

Literature Review

Mobile Banking Adoption: An Overview

Mobile banking has emerged as a critical innovation in the financial sector, offering customers the ability to conduct banking transactions anytime and anywhere through their mobile devices. The adoption of mobile banking has been the subject of extensive research, with studies examining various factors influencing its acceptance and use across different contexts. Early research on mobile banking adoption primarily focused on technological factors. Davis's (1989), Technology Acceptance Model (TAM) has been widely applied, emphasizing the roles of perceived usefulness and perceived ease of use in shaping adoption intentions. Subsequent studies have extended this model, incorporating additional factors such as perceived risk, trust, and social influence (Alalwan et al., 2017; Hanafizadeh et al., 2014).

A meta-analysis by Shaikh and Karjaluoto (2015), reviewed 55 mobile banking adoption studies, finding that compatibility, perceived usefulness, and attitude were the most significant drivers of mobile banking adoption intentions. However, they noted considerable variation in findings across different cultural contexts, suggesting the need for more culturally nuanced research.

Table 1
Key Factors Influencing Mobile Banking Adoption (adapted from Shaikh & Karjaluoto, 2015)

Factor	Description	Significance
Compatibility	Degree to which mobile banking aligns with users' existing values and needs	High
Perceived Usefulness	Belief that using mobile banking will enhance one's performance	High
Attitude	Overall evaluation of mobile banking use	High
Perceived Ease of Use	Belief that using mobile banking will be free of effort	Moderate
Trust	Belief in the reliability and integrity of the mobile banking system	Moderate
Perceived Risk	Potential for loss associated with using mobile banking	Moderate

Mobile Banking in the Jordanian Context

Jordan presents a unique case for studying mobile banking adoption. Despite high mobile phone penetration and internet usage rates, the adoption of mobile banking services has been relatively slow. Al-Rfou (2013) found that while Jordanian banks have invested heavily in mobile banking technologies, customer uptake has not met expectations. This disparity

highlights the need to look beyond purely technological factors to understand adoption behaviors.

Several studies have examined mobile banking adoption in Jordan. Alalwan et al. (2017) applied an extended Unified Theory of Acceptance and Use of Technology (UTAUT2) model to the Jordanian context, finding that performance expectancy, effort expectancy, hedonic motivation, price value, and trust were significant predictors of adoption intention. However, they noted that the influence of these factors might be moderated by cultural variables not captured in their model.

Cultural Dimensions and Technology Adoption

Hofstede's cultural dimensions theory Hofstede (2007), provides a framework for understanding how national culture influences behavior, including technology adoption. The theory outlines six dimensions: Power Distance, Individualism vs. Collectivism, Masculinity vs. Femininity, Uncertainty Avoidance, Long-term vs. Short-term Orientation, and Indulgence vs. Restraint.

Table 2
Hofstede's Cultural Dimensions for Jordan (adapted from Hofstede Insights, 2021)

Cultural Dimension	Score	Interpretation
Power Distance	70	High: Hierarchical society, centralized authority
Individualism	30	Low: Collectivist society, strong group cohesion
Masculinity	45	Moderate: Balance between competition and quality of life
Uncertainty Avoidance	65	High: Preference for certainty, risk-averse
Long-term Orientation	16	Very low: Strong respect for traditions, short-term focus
Indulgence	43	Moderate: Balance between restraint and indulgence

Several studies have explored the intersection of cultural dimensions and technology adoption. Baptista and Oliveira (2015), integrated Hofstede's cultural dimensions with the UTAUT model to study mobile banking adoption across countries. They found that cultural factors significantly moderated the relationships between UTAUT constructs and behavioral intention.

In the context of e-commerce adoption, Yoon (2009), found that uncertainty avoidance and long-term orientation significantly influenced perceived ease of use and usefulness in China. Similarly, Al-Gahtani et al (2007), examined IT adoption in Saudi Arabia, finding that power distance and uncertainty avoidance moderated the impact of subjective norms on technology use.

Cultural Factors and Mobile Banking Adoption

The influence of cultural factors on mobile banking adoption has gained increasing attention in recent years. Zhang et al (2018), conducted a meta-analysis of 45 studies on electronic banking adoption, finding that Hofstede's cultural dimensions moderated the relationships between various antecedents and adoption intentions. Specifically, they found that power

distance strengthened the effect of perceived usefulness on adoption intention, while uncertainty avoidance weakened this relationship.

In the Middle Eastern context, Tarhini et al (2019), examined mobile commerce adoption in Lebanon, incorporating cultural values as moderators. They found that masculinity and uncertainty avoidance significantly moderated the relationships between social influence, effort expectancy, and adoption intention.

However, research specifically addressing the impact of cultural factors on mobile banking adoption in Jordan remains limited. Given Jordan's unique cultural profile and the observed gap between technological readiness and mobile banking adoption, there is a clear need for research that integrates cultural dimensions into the study of mobile banking adoption in this context.

Gaps in the Literature and Research Opportunities

While existing research provides valuable insights into mobile banking adoption and the role of cultural factors in technology acceptance, several gaps remain:

1. Limited focus on the Middle Eastern context: Most studies on cultural influences in mobile banking adoption have focused on Western or East Asian contexts. The unique cultural landscape of Middle Eastern countries like Jordan remains understudied.

2. Lack of integration between technology acceptance models and cultural dimensions: While some studies have incorporated cultural factors, few have systematically integrated Hofstede's dimensions with established technology acceptance models in the context of mobile banking.

3. Insufficient attention to the moderating role of culture: Many studies treat cultural factors as direct antecedents of adoption intention, potentially overlooking their more nuanced role in moderating the relationships between other factors and adoption intention.

4. Limited exploration of culture's impact on specific mobile banking features: Research has largely focused on general adoption intentions, with less attention paid to how cultural factors might influence the use of specific mobile banking features or services.

This study aims to address these gaps by providing a comprehensive examination of how cultural factors influence mobile banking adoption in Jordan. By integrating Hofstede's cultural dimensions with the Technology Acceptance Model and considering both direct and moderating effects, this research seeks to offer a more nuanced understanding of the cultural dynamics shaping mobile banking adoption in the Jordanian context.

Research Model and Hypotheses

Based on the literature review, we propose an integrated research model that combines the Technology Acceptance Model (TAM) with Hofstede's cultural dimensions to explain mobile banking adoption in Jordan. The model incorporates the core TAM constructs - Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) - along with additional factors found to be significant in previous mobile banking studies: Perceived Risk (PR) and Social Influence (SI).

Hofstede's cultural dimensions are introduced as moderating variables to examine their impact on the relationships between these factors and the intention to use mobile banking.

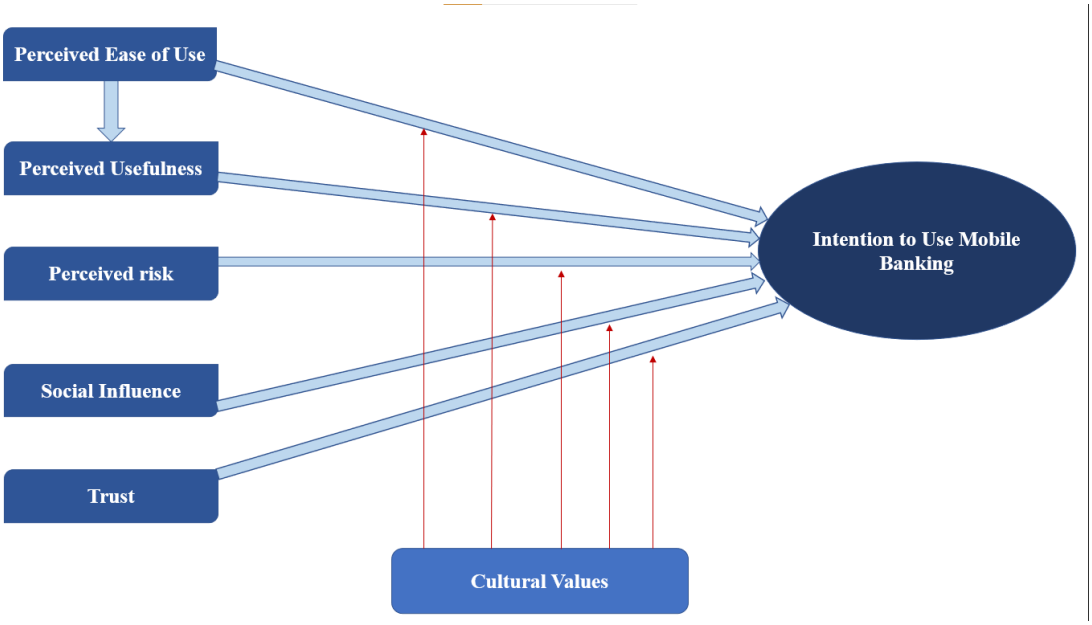

Figure 1: Proposed Research Model

Perceived Usefulness is grounded in the original TAM (Davis, 1989) and has been consistently supported in mobile banking adoption studies (Alalwan et al., 2016; Shaikh & Karjaluoto, 2015). PEOU has been found to be a significant predictor of technology adoption intentions, including in mobile banking contexts (Hanafizadeh et al., 2014). Previous studies have highlighted the importance of perceived risk in mobile banking adoption, particularly in developing countries (Baabdullah et al., 2019). Social influence has been shown to play a significant role in technology adoption, especially in collectivist societies like Jordan (Alalwan et al., 2017).

The following hypotheses are proposed based on the research model:
H1: Perceived Usefulness (PU) positively influences the intention to use mobile banking.
H2: Perceived Ease of Use (PEOU) positively influences the intention to use mobile banking.
H3: Perceived Risk (PR) negatively influences the intention to use mobile banking.
H4: Trust (T) positively influences the intention to use mobile banking.
H5: Social Influence (SI) positively influences the intention to use mobile banking.
H6: Perceived Ease of Use (PEOU) positively influences the Perceived Usefulness (PU).

Cultural Dimensions as Moderators:
H7: Cultural Factors moderates the relationships between (a) PU, (b) PEOU, (c) PR, (d) Trust, (e) SI and intention to use mobile banking.
H8: Perceived Usefulness (PU) mediate the relationship between Perceived Ease of Use (PEOU) and intention to use mobile banking.

Cultural dimensions may exert moderating effects on the relationships between key constructs in technology adoption models within the context of mobile banking in Jordan. In cultures characterized by high power distance, such as Jordan, the influence of authority

figures and institutions may amplify the impact of perceived usefulness and social influence on adoption intentions (Tarhini et al., 2019). Collectivist societies may exhibit a stronger relationship between social influence and adoption intentions, while potentially attenuating the effect of perceived usefulness (Baptista & Oliveira, 2015).

High uncertainty avoidance cultures may demonstrate an increased negative effect of perceived risk on adoption intentions, as well as a heightened importance of perceived ease of use in technology acceptance decisions (Zhang et al., 2018). Societies with a short-term orientation, like Jordan, may place greater emphasis on immediate factors such as perceived ease of use, while diminishing the importance of long-term benefits associated with perceived usefulness (Yoon, 2009). In more feminine-oriented cultures, the impact of social influence on adoption intentions may be intensified due to a greater emphasis on social harmony in decision-making processes (Tarhini et al., 2019).

These hypothesized moderating effects of cultural dimensions on technology adoption constructs warrant empirical investigation within the Jordanian mobile banking context. Future research should employ rigorous quantitative methods to test these proposed relationships and their potential implications for technology acceptance models in culturally diverse settings. Such investigations could provide valuable insights into the cultural nuances of technology adoption and inform more effective strategies for implementing mobile banking services in Jordan and similar cultural contexts.

These hypotheses reflect the complex interplay between technology acceptance factors and cultural dimensions in shaping mobile banking adoption intentions. By testing these relationships, we aim to provide a nuanced understanding of how cultural factors influence the adoption process in the Jordanian context.

Research Methodology

Research Design

This study employs a quantitative approach, using a cross-sectional survey design to test the proposed hypotheses. This method is consistent with previous studies in technology adoption and allows for the collection of a large amount of data to examine relationships between variables (Creswell & Creswell, 2017). Figure 1 shows the research model:

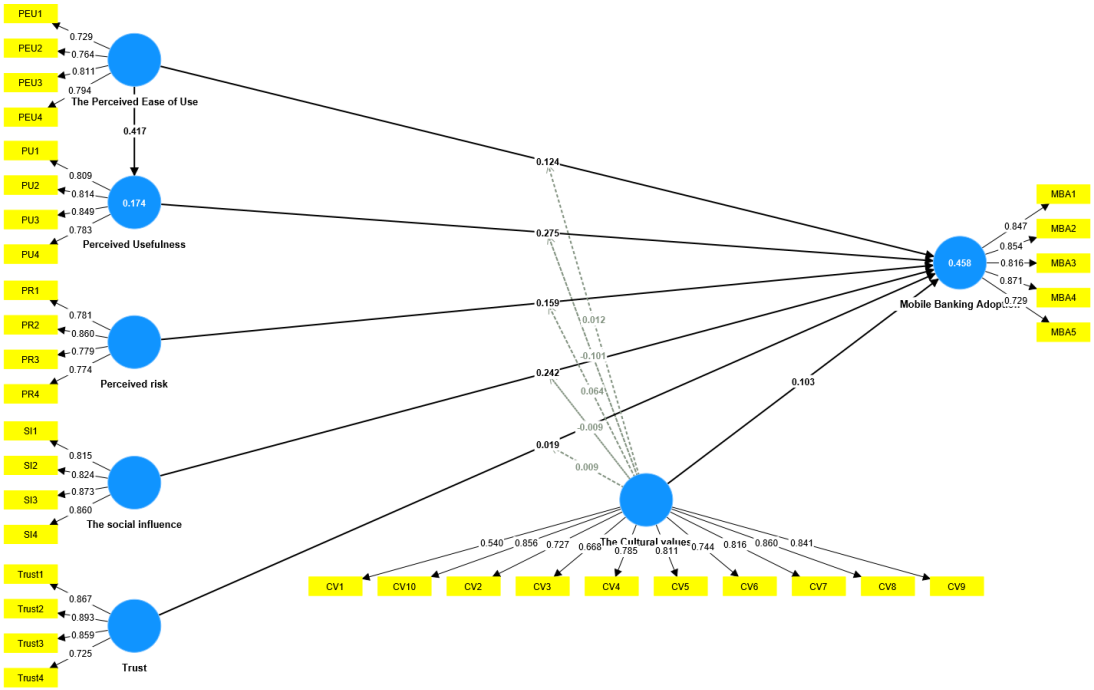

Figure 1: Research Model

Population and Sampling

The target population for this study is adult mobile phone users in Jordan who are potential or current users of mobile banking services. Given the high mobile phone penetration rate in Jordan (95% according to Alzougool, 2018), this population represents a significant portion of the country's adult population.

A multi-stage sampling approach will be used:

1. Stratified Sampling: Jordan will be divided into three regions (North, Central, South) to ensure geographical representation.
2. Cluster Sampling: Within each region, urban and rural areas will be randomly selected.
3. Convenience Sampling: Within selected areas, participants will be recruited at various public locations (e.g., shopping centers, universities) to ensure diversity in age and socioeconomic status.

Sample Size: Based on the population size and using Krejcie and Morgan's (1970) sample size determination table, a minimum sample size of 384 is required for a population exceeding 1,000,000 at a 95% confidence level. To account for potential non-responses and invalid responses, we aim to distribute 500 questionnaires.

Data Collection Instrument

A structured questionnaire will be developed based on validated scales from previous studies, adapted to the Jordanian context. The questionnaire will consist of the following sections:

1. Demographic Information: Age, gender, education level, income, occupation.
2. Technology Acceptance Factors: Measures for PU, PEOU, PR, T, and SI.
3. Cultural Factors: Measures for individual-level cultural values.
4. Intention to Use Mobile Banking: Measures for future usage intentions.

Table 3
Measurement Scales

Construct	Number Of Items	Source
Perceived Usefulness (PU)	4	Davis (1989), Alalwan et al. (2017)
Perceived Ease of Use (PEOU)	4	Davis (1989), Alalwan et al. (2017)
Perceived Risk (PR)	4	Featherman & Pavlou (2003), Baabdullah et al. (2019)
Social Influence (SI)	4	Venkatesh et al. (2003), Alalwan et al. (2017)
Trust (T)	4	Davis (1989), Alalwan et al. (2017)
Cultural Values (CV)	10	Yoo et al. (2011)
Intention to Use	5	Venkatesh et al. (2003), Alalwan et al. (2017)

All items will be measured using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Pilot Study

A pilot study will be conducted with 50 participants to assess the clarity, reliability, and validity of the questionnaire. Cronbach's alpha will be used to assess the internal consistency of the scales, with a threshold of 0.7 considered acceptable (Nunnally & Bernstein, 1994). Based on the pilot study results, necessary modifications will be made to the questionnaire.

Data Collection Procedure

Data will be collected through face-to-face administration of the questionnaire by trained research assistants. This method is chosen to ensure a high response rate and to provide assistance if participants have questions about the survey items. The data collection process will take place over a period of two months to ensure adequate coverage of different locations and times.

Ethical Considerations

Ethical approval will be obtained from the relevant institutional review board. Participants will be provided with an information sheet explaining the purpose of the study, and informed consent will be obtained before participation. All data will be anonymized to protect participant privacy.

Data Analysis

Data analysis will be conducted using SPSS 26.0 and SmartPLS 3.0. The analysis will proceed in the following stages:

1. Data Screening and Preliminary Analysis:
   - Missing data analysis
   - Outlier detection
   - Normality tests
   - Descriptive statistics
2. Measurement Model Assessment:
   - Confirmatory Factor Analysis (CFA) to assess construct validity

- Cronbach's alpha and Composite Reliability for internal consistency
- Average Variance Extracted (AVE) for convergent validity
- Fornell-Larcker criterion and Heterotrait-Monotrait (HTMT) ratio for discriminant validity

3. Structural Model Assessment:
- Path analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM)
- R^2 values to assess the predictive power of the model
- f^2 effect sizes to evaluate the impact of individual predictors
- Q^2 values for predictive relevance

Table 4
Data Analysis Techniques

Analysis Stage	Techniques	Purpose
Preliminary Analysis	Descriptive statistics, normality tests	Data screening and sample description
Measurement Model	CFA, Reliability tests, Validity tests	Assess psychometric properties of measures
Structural Model	PLS-SEM	Test hypothesized relationships

PLS-SEM is chosen for its ability to handle complex models with multiple relationships simultaneously and its suitability for exploratory research (Hair et al., 2017). It is particularly appropriate for this study given the inclusion of moderating effect and the potential for non-normal data distribution often encountered in social science research.

Validity and Reliability

Several measures will be taken to ensure the validity and reliability of the study:

1. Content Validity: The questionnaire will be reviewed by experts in mobile banking and cross-cultural research to ensure its comprehensiveness and relevance.
2. Construct Validity: Confirmatory Factor Analysis will be used to assess both convergent and discriminant validity.
3. Reliability: Internal consistency will be assessed using Cronbach's alpha and Composite Reliability.
4. Common Method Bias: Harman's single-factor test will be conducted to check for common method bias.

Results

Demographic Profile

A total of 500 questionnaires were distributed, with 437 valid responses received, yielding a response rate of 87.4%. Table 5 presents the demographic profile of the respondents.

Table 5
Demographic Profile of Respondents

Characteristic	Category	Frequency	Percentage
Gender	Male	212	48.50%
	Female	225	51.50%
Age	Less than 30	116	26.50%
	30 to 40	210	48.10%
	40 to 50	77	17.60%
	50 or more	34	7.80%
Education Level	Less than high school	16	3.70%
	High school	34	7.80%
	Bachelor's degree	224	51.30%
	Master's degree	133	30.40%
	Ph.D.	30	6.90%
Monthly Income	Less than 500 JD	32	7.30%
	500 to 1000 JD	34	7.80%
	1000 to 1500 JD	206	47.10%
	1500 to 2000 JD	105	24.00%
	2000 JD and more	23	5.30%
	Prefer not to disclose	37	8.50%

The sample shows a balanced gender distribution and a good representation across age groups, education levels, and income brackets, reflecting the diverse demographics of mobile banking users in Jordan.

Descriptive Statistics

Table 6 presents the descriptive statistics for the main constructs in the study.

Table 6
Descriptive Statistics of Main Constructs

Construct	Mean	Standard Deviation	Skewness	Kurtosis
Perceived Usefulness (PU)	3.695	0.815	-0.604	0.173
Perceived Ease of Use (PEOU)	4.077	0.686	-1.033	1.467
Perceived Risk (PR)	3.848	0.734	-0.668	0.732
Social Influence (SI)	3.797	0.838	-0.791	0.376
Trust (T)	3.848	0.797	-0.768	0.347
Cultural Values (CV)	4.154	0.63	-0.486	-0.223
Intention to Use	3.858	0.791	-0.757	0.3

All constructs show mean values above the midpoint of 3, indicating generally positive perceptions towards mobile banking. The highest mean is for Cultural Values (4.154), followed by Perceived Ease of Use (4.077), suggesting that cultural factors and ease of use are particularly salient in the Jordanian context. Skewness and kurtosis values are within acceptable ranges (-2 to +2), indicating no severe departures from normality (George & Mallery, 2010).

Measurement Model Assessment

Confirmatory Factor Analysis (CFA) was conducted to assess the measurement model. Table 7 presents the results of the reliability and validity tests.

Table 7
Reliability and Validity of Constructs

Construct	Cronbach's Alpha	Composite Reliability	AVE	√AVE
PU	0.83	0.887	0.663	0.814
PEOU	0.781	0.857	0.6	0.775
PR	0.811	0.876	0.639	0.799
SI	0.865	0.908	0.711	0.843
T	0.862	0.898	0.703	0.838
CV	0.924	0.935	0.594	0.771
Intention to Use	0.881	0.914	0.68	0.825

All constructs demonstrate good internal consistency with Cronbach's alpha and Composite Reliability values above the recommended threshold of 0.7 (Hair et al., 2017). The Average Variance Extracted (AVE) values are all above 0.5, indicating satisfactory convergent validity (Fornell & Larcker, 1981).

Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. Table 8 presents the Fornell-Larcker criterion results.

Table 8
Fornell-Larcker Criterion

Construct	PU	PEOU	PR	SI	T	CV	Intention
PU	0.814						
PEOU	0.417	0.775					
PR	0.538	0.516	0.799				
SI	0.518	0.451	0.655	0.843			
T	0.357	0.396	0.420	0.536	0.838		
CV	0.073	-0.067	0.032	0.073	-0.015	0.771	
Intention	0.562	0.429	0.541	0.56	0.354	0.133	0.825

The square root of AVE (diagonal values) is greater than the inter-construct correlations for all constructs, supporting discriminant validity. The HTMT ratios were all below the conservative threshold of 0.85, further confirming discriminant validity (Henseler et al., 2015).

Structural Model Assessment

The structural model was assessed using PLS-SEM. Table 9 presents the path coefficients, t-values, and p-values for the hypothesized relationships.

Table 9
Structural Model Results

Hypothesis	Relationship	Path Coefficient	t-value	p-value	Result
H1	PU → Intention	0.275	5.851	<0.001	Supported
H2	PEOU → Intention	0.124	2.493	0.013	Supported
H3	PR → Intention	-0.159	-3.056	0.002	Supported
H4	T → Intention	0.019	0.413	0.680	Not Supported
H5	SI → Intention	0.242	4.518	<0.001	Supported
H6	PEOU → PU	0.417	9.094	0.000	Supported
H7a	CV x PU → Intention	-0.101	-2.017	0.044	Supported
H7b	CV x PEOU → Intention	0.012	0.245	0.806	Not Supported
H7c	CV x PR → Intention	0.064	1.121	0.262	Not Supported
H7d	CV x T → Intention	0.009	0.196	0.845	Not Supported
H7e	CV x SI → Intention	-0.009	-0.161	0.872	Not Supported
H8	PEOU → PU → Intention	0.114	4.640	0.000	Supported

The model explains 45.8% of the variance in intention to use mobile banking ($R^2 = 0.458$), indicating good explanatory power (Chin, 1998).

Direct Analysis

All hypothesized direct relationships (H1-H6) are supported except for Trust. Perceived Usefulness ($\beta = 0.275$, $p < 0.001$) and Social Influence ($\beta = 0.242$, $p < 0.001$) have the strongest positive effects on intention to use mobile banking. Perceived Ease of Use shows a weaker but still significant positive effect ($\beta = 0.124$, $p = 0.013$). As expected, Perceived Risk has a significant negative effect on intention ($\beta = -0.159$, $p = 0.002$). Perceived Ease of Use on Perceived Usefulness ($\beta = 0.417$, $p < 0.001$), Trust on intention ($\beta = 0.019$, $p = 0.680$).

Moderation Analysis

The results of the moderation analysis (H7) show that Cultural Values significantly moderate only the relationship between Perceived Usefulness and Intention to Use (H7a supported, $\beta = -0.101$, $p = 0.044$). The negative moderation effect suggests that the positive influence of Perceived Usefulness on Intention to Use is weakened in the presence of strong cultural values. This finding implies that in the Jordanian context, cultural factors may somewhat diminish the importance of perceived usefulness in driving mobile banking adoption.

The moderating effects of Cultural Values on the relationships between Perceived Ease of Use, Perceived Risk, Trust, and Social Influence with Intention to Use were not statistically significant (H7b, H7c, H7d, H7e not supported).

Mediation Analysis

The results show the indirect effect of perceived ease of use on adoption via perceived usefulness has a path coefficient of ($\beta = 0.114$, $p < 0.001$), the null hypothesis H8 is rejected.

It is concluded that there is a significant positive indirect effect of perceived ease of use on mobile banking adoption through perceived usefulness as the mediating variable. This relationship is consistent with prior technology acceptance research. Enhancing ease of use can augment perceived usefulness, which in turn positively influences adoption intentions.

Discussion

This study aimed to investigate the impact of cultural factors on mobile banking adoption in Jordan by integrating Hofstede's cultural dimensions with the Technology Acceptance Model (TAM). The results provide several important insights into the complex interplay between technological and cultural factors in shaping mobile banking adoption intentions in the Jordanian context.

Technology Acceptance Factors

Consistent with previous research on technology adoption, our findings confirm the significance of key TAM constructs in predicting mobile banking adoption intentions in Jordan. Perceived Usefulness (PU) emerged as the strongest predictor of intention to use mobile banking, followed closely by Social Influence (SI). This aligns with studies by Alalwan et al. (2017) and Shaikh and Karjaluoto (2015), emphasizing the importance of demonstrating the practical benefits of mobile banking to potential users.

The significant positive effect of Perceived Ease of Use (PEOU) on adoption intentions, although weaker than PU and SI, underscores the importance of user-friendly interfaces and intuitive design in mobile banking applications. This finding is consistent with Hanafizadeh et al (2014), and highlights the need for banks to focus on simplifying the user experience to encourage adoption.

Perceived Risk (PR) showed a significant negative effect on adoption intentions, confirming the importance of addressing security and privacy concerns in the Jordanian context. This aligns with findings from Baabdullah et al (2019), in other developing countries and suggests that banks need to prioritize robust security measures and effectively communicate these to potential users to mitigate perceived risks.

Interestingly, Trust (T) did not show a significant direct effect on adoption intentions, contrary to some previous studies (e.g., Alalwan et al., 2016). This unexpected result may be due to the high uncertainty avoidance characteristic of Jordanian culture, where general trust might be less influential than specific risk perceptions in technology adoption decisions.

Cultural Factors and Their Moderating Effects

The inclusion of cultural factors as moderators in our model revealed nuanced insights into their role in mobile banking adoption. The significant moderating effect of Cultural Values on the relationship between Perceived Usefulness and Intention to Use is particularly noteworthy. The negative moderation suggests that in the presence of strong cultural values, the impact of perceived usefulness on adoption intentions is somewhat diminished.

This finding can be interpreted in light of Jordan's cultural profile. The high power distance and collectivist nature of Jordanian society (Hofstede, 2007) may mean that individual perceptions of usefulness are less influential in adoption decisions compared to social norms

or authority influences. This aligns with Tarhini et al (2019), findings in Lebanon, another Middle Eastern country with similar cultural characteristics.

The non-significant moderating effects of Cultural Values on the relationships between PEOU, PR, T, SI, and adoption intentions were unexpected. This suggests that while cultural factors play a role in shaping adoption behaviors, their influence may be more complex or subtle than initially hypothesized. It's possible that the effects of culture are more pronounced at a macro level, influencing overall attitudes towards technology, rather than moderating specific relationships within the adoption decision process.

The Role of Social Influence

The strong positive effect of Social Influence on adoption intentions aligns with Jordan's collectivist culture. In such societies, individuals are more likely to be influenced by the opinions and behaviors of their social group (Baptista & Oliveira, 2015). This finding underscores the potential effectiveness of word-of-mouth marketing and social proof strategies in promoting mobile banking adoption in Jordan.

Perceived Ease of Use and Perceived Usefulness

The significant positive relationship between PEOU and PU, and the mediating role of PU in the relationship between PEOU and adoption intentions, supports the original structure of the TAM (Davis, 1989). This suggests that by enhancing the ease of use of mobile banking applications, banks can indirectly increase adoption intentions through improved perceptions of usefulness.

Cultural Values as a Direct Predictor

While not initially hypothesized, the post-hoc analysis revealing a significant direct effect of Cultural Values on adoption intentions provides an interesting insight. This suggests that cultural factors not only moderate relationships between variables but also directly influence adoption decisions. The positive effect indicates that individuals with stronger cultural values may be more inclined to adopt mobile banking, possibly viewing it as a way to participate in technological advancement while maintaining cultural identity.

Implications for Technology Adoption Models in Cross-Cultural Contexts

Our findings contribute to the ongoing discussion about the applicability of Western-developed technology adoption models in diverse cultural contexts. While the core relationships proposed by TAM hold in the Jordanian context, the inclusion of cultural factors reveals a more nuanced picture of adoption behaviors. This supports the argument for culturally sensitive adaptations of technology acceptance models, as proposed by researchers like (Zhang et al., 2018; and Baptista and Oliveira, 2015).

The study highlights the need for a more holistic approach to understanding technology adoption in diverse cultural settings. It suggests that while technological factors are crucial, cultural dimensions play a significant role in shaping how these factors influence adoption decisions. This has important implications for both researchers and practitioners in the field of technology adoption.

In conclusion, this study provides valuable insights into the complex dynamics of mobile banking adoption in Jordan, highlighting the interplay between technological factors and cultural dimensions. It underscores the need for banks and policymakers to consider both technological and cultural aspects in their strategies to promote mobile banking adoption. Future research should continue to explore these relationships in diverse cultural contexts to develop more comprehensive and culturally sensitive models of technology adoption.

Conclusion and Implications

This study set out to investigate the impact of cultural factors on mobile banking adoption in Jordan by integrating Hofstede's cultural dimensions with the Technology Acceptance Model. The findings provide several key conclusions and implications for theory and practice.

Theoretical Implications

1. Extension of TAM in Cultural Contexts: Our study contributes to the growing body of literature on technology adoption in diverse cultural settings. By incorporating cultural dimensions as moderators, we have extended the traditional TAM to provide a more nuanced understanding of adoption behaviors in non-Western contexts. This addresses the call for more culturally sensitive technology adoption models (Baptista & Oliveira, 2015; Zhang et al., 2018).

2. Complex Role of Cultural Factors: The study reveals that the influence of cultural factors on technology adoption is more complex than often assumed. While cultural values moderated the relationship between perceived usefulness and adoption intentions, they did not significantly moderate other relationships. This suggests that cultural influences may operate at different levels within the adoption decision process, highlighting the need for more sophisticated conceptualizations of culture in technology adoption models.

3. Importance of Social Influence: The strong effect of social influence on adoption intentions underscores the relevance of social factors in collectivist cultures. This finding contributes to our understanding of how cultural characteristics shape the relative importance of different adoption factors.

4. Mediation Effect of Perceived Usefulness: The confirmation of perceived usefulness as a mediator between perceived ease of use and adoption intentions supports the internal structure of TAM and its applicability in the Jordanian context.

Practical Implications

1. Tailored Marketing Strategies: Banks and financial institutions in Jordan should develop marketing strategies that emphasize the usefulness and benefits of mobile banking while also leveraging social influence. Given the collectivist nature of Jordanian society, testimonials from respected community members or influencers could be particularly effective.

2. User-Friendly Design: The significant effect of perceived ease of use highlights the importance of developing intuitive and user-friendly mobile banking interfaces. Banks should invest in user experience design and thorough usability testing to ensure their applications are accessible to a wide range of users.

3. Risk Mitigation: The negative impact of perceived risk on adoption intentions suggests that banks need to prioritize and communicate their security measures effectively. This could include educational campaigns about mobile banking security and transparent policies on data protection and fraud prevention.

4. Cultural Sensitivity: While promoting the usefulness of mobile banking, banks should be mindful of how cultural values might influence perceptions. Marketing messages should be crafted to resonate with Jordanian cultural values, potentially emphasizing how mobile banking can support family financial management or community economic well-being.

5. Social Proof Strategies: Given the importance of social influence, banks could implement referral programs or community-based initiatives to encourage mobile banking adoption through social networks.

6. Trust-Building Measures: Although trust did not show a significant direct effect on adoption intentions, banks should still focus on building trust through transparency, reliable service, and responsive customer support. This may help mitigate perceived risks and enhance overall attitudes towards mobile banking.

Policy Implications

1. Regulatory Framework: Policymakers should develop a regulatory framework that balances innovation with cultural sensitivity. This could include guidelines for mobile banking providers on culturally appropriate communication and service design.

2. Digital Literacy Programs: Government initiatives to improve digital literacy could help reduce barriers to mobile banking adoption, particularly among older or less technologically savvy segments of the population.

3. Cultural Preservation: Policies should encourage the integration of mobile banking in ways that complement rather than conflict with traditional cultural values. This could involve promoting mobile banking as a tool for supporting family financial management or community economic development.

4. Cross-Sector Collaboration: Policymakers should facilitate collaboration between banks, technology providers, and cultural institutions to develop mobile banking solutions that are both technologically advanced and culturally resonant.

Limitations and Future Research

While this study provides valuable insights into the role of cultural factors in mobile banking adoption in Jordan, several limitations should be acknowledged:

1. Cross-sectional Design: The study's cross-sectional nature limits our ability to capture changes in adoption intentions over time. Future research could employ longitudinal designs to examine how cultural influences on adoption behaviors may evolve.

2. Self-reported Data: The reliance on self-reported measures may introduce common method bias. Future studies could incorporate objective measures of mobile banking use to complement self-reported intentions.

3. Generalizability: The focus on Jordan limits the generalizability of findings to other cultural contexts. Comparative studies across multiple Middle Eastern or developing countries could provide a more comprehensive understanding of cultural influences on mobile banking adoption.

4. Cultural Measurement: While we used established measures of cultural values, culture is a complex, multi-faceted construct. Future research could explore alternative operationalizations of culture, including qualitative approaches to capture nuanced cultural influences.

5. Limited Exploration of Specific Features: This study focused on general mobile banking adoption. Future research could examine how cultural factors influence the adoption of specific mobile banking features or services.

Future Research Directions Could Include

1. Exploring the role of additional cultural dimensions, such as Indulgence vs. Restraint, in technology adoption contexts.
2. Investigating how cultural factors interact with demographic variables (e.g., age, gender, education) to influence mobile banking adoption.
3. Examining the potential for cultural values to evolve in response to technological advancements and how this might impact future adoption behaviors.
4. Conducting mixed-methods studies to provide a more comprehensive understanding of the cultural nuances influencing mobile banking adoption.
5. Investigating how cultural factors influence post-adoption behaviors, such as continued use and recommendation of mobile banking services.

References

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. International Journal of Information Management, 37(3), 99-110.

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P. P., & Williams, M. D. (2016). Consumer adoption of mobile banking in Jordan: Examining the role of usefulness, ease of use, perceived risk and self-efficacy. Journal of Enterprise Information Management, 29(1), 118-139.

Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. Information & Management, 44(8), 681-691.

Al-Rfou, A. N. (2013). The usage of Internet banking evidence from Jordan. Asian Economic and Financial Review, 3(5), 614-623.

Alzougool, B. (2018). The impact of motives for Facebook use on Facebook addiction among ordinary users in Jordan. International Journal of Social Psychiatry, 64(6), 528-535.

Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Kizgin, H., & Patil, P. (2019). Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model. International Journal of Information Management, 44, 38-52.

Baptista, G., & Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. Computers in Human Behavior, 50, 418-430.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. Modern Methods for Business Research, 295(2), 295-336.

Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.

Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: A perceived risk facets perspective. International Journal of Human-Computer Studies, 59(4), 451-474.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50.

George, D., & Mallery, P. (2010). SPSS for Windows step by step: A simple guide and reference, 17.0 update (10th ed.). Boston: Pearson.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.). Sage Publications.

Hanafizadeh, P., Behboudi, M., Koshksaray, A. A., & Tabar, M. J. S. (2014). Mobile-banking adoption by Iranian bank clients. Telematics and Informatics, 31(1), 62-78.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115-135.

Hofstede, G. (2007). Asian management in the 21st century. Asia Pacific Journal of Management, 24(4), 411-420.

Hofstede Insights. (2021). Country Comparison - Jordan. Retrieved from https://www.hofstede-insights.com/country-comparison/jordan/

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30(3), 607-610.

Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric theory (3rd ed.). McGraw-Hill.

Shaikh, A. A., & Karjaluoto, H. (2015). Mobile banking adoption: A literature review. Telematics and Informatics, 32(1), 129-142.

Tarhini, A., Alalwan, A. A., Shammout, A. B., & Al-Badi, A. (2019). An analysis of the factors affecting mobile commerce adoption in developing countries: Towards an integrated model. Review of International Business and Strategy, 29(3), 157-179.

Thakur, N., & Han, C. Y. (2021). Country-Specific Interests towards Fall Detection from 2004-2021: An Open Access Dataset and Research Questions. Data, 6(8), 92.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.

Yoo, B., Donthu, N., & Lenartowicz, T. (2011). Measuring Hofstede's five dimensions of cultural values at the individual level: Development and validation of CVSCALE. Journal of International Consumer Marketing, 23(3-4), 193-210.

Yoon, C. (2009). The effects of national culture values on consumer acceptance of e-commerce: Online shoppers in China. Information & Management, 46(5), 294-301.

Zhang, Y., Weng, Q., & Zhu, N. (2018). The relationships between electronic banking adoption and its antecedents: A meta-analytic study of the role of national culture. International Journal of Information Management, 40, 76-87.