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Examining the adoption decision of Islamic electronic banks in Jordan

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A B S T R A C T

This study aims to examine the factors affecting Jordanian Islamic banks' customers' adoption of electronic banks. The study relied on quantitative methods, where the study designed a questionnaire based on the Technology Acceptance Model (TAM) which derived from the Theory of Reasoned Action (TRA). The study sample consisted of 470 respondents. The study applied the Partial Least Squares Structural Equation Modeling (PLS-SEM), where the results of the Chi-square test and the standardized root mean square residual (SRMR) test showed the validity of the model for analysis. The results showed that usefulness, privacy, and awareness affect the adoption of e-banking, and that ease to use and electronic skills affect the adoption of e-banking through usefulness. The results also show that Infrastructure does not affect the adoption of e-banking, and Convenience does not affect the adoption of e-banking through Intention to use e-banking. The study advises Islamic banks to spread awareness about the importance of electronic banking and design easy-to-use electronic services that enjoy privacy and security.

1. Introduction

In recent years, the technology revolution has spread around the world, leading to significant development in technological services, the Internet and communications systems. The nature of the economy has transformed into a digital economy, and people's economic habits have changed. Globalization and the interdependence of the world have led to an increase in the impact of electronic transformation, and the greatest impact appears on the interdependence of global banking systems (Ahmeti & Prenaj, 2022). These changes contributed to the success of electronic banking services, due to the similarity of the application of electronic banking services among banks around the world (Intana et al., 2013). Moreover, electronic banking services have become a global phenomenon and a valuable tool, supporting innovation and improving the competitiveness of banks (Alhawamdeh & Bardai, 2017). Raza & Hanif (2013) believes that the investment of technological progress has become a criterion for the success and efficiency of banks. The continuous development of technology led to a rapid growth of the banking electronic services, so electronic services diversified, and the banking industry expanded greatly, reaching various regions without investing a lot of money in banking infrastructure (Aydogan & Van Hove, 2017). Ahmeti and Prenaj (2022) and Indrasaria et al. (2022) indicated that the spread of the Covid-19 epidemic stopped the world, which led to the increasing use of electronic banking services by bank customers. In fact, internet banking began in the 1980s and picked up steam in the 1990s as the USA and Europe pioneered the use of Internet banking services. The use of electronic banking services has spread widely. Due to the widespread use of mobile devices and tablets (Kose, 2009). Electronic banking services have gradually replaced traditional banking services, allowing customers to carry out banking operations at any time and from anywhere, without cost and without visiting the bank. Banks offer a lot of electronic banking services such as viewing account details, obtaining account statements, paying bills, transferring funds within customer

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accounts, paying by credit cards and reviewing the latest foreign exchange rates (Malhotra and Singh, 2007). Islamic banks proliferated, which led to increased competition with other Islamic banks and various institutions that provide banking services compatible with the provisions of Islamic law, so Islamic banks needed to maintain their competitiveness by taking advantage of technological development (Johar & Suhartanto, 2019). Many studies have examined the determinants of the use of traditional electronic banks in Jordan, and the determinants of the use of Islamic electronic banks in other countries, so this study helps fill the gap in studies that have investigated the determinants of the use of Islamic electronic banks in Jordan. Hence, the main purpose of this study is to examine the determinants of the adoption of Islamic electronic banking in Jordanian.

2. Literature Review

2.1 Electronic banking

The concept of electronic services refers to the application of information technology in providing services (Raza & Hanif, 2013), which is the use of electronic communication channels to deliver services to customers automatically (Rawwash et al., 2020). The concept of electronic banking is derived from the concept of electronic banking services, which is defined as a set of procedures applied by the customer to complete banking transactions electronically (Mehmood et al., 2014). Customers access banking services through the bank's website (Yee & Faziharudean, 2010). This means that it is a composite of technology that provides customers with access to information about the products and services offered by banks (Arora, 2022). Therefore, electronic banking is a framework that enables bank customers to access their accounts at any time by laptop, mobile phone, or any other smart device (Saidi et al., 2016).

Banks have realized the importance of switching to electronic banking services as a main channel of customer service (Mohd Thas Thaker et al., 2018). Banks have developed electronic services using various communication channels, such as ATMs; To facilitate operations for its clients (Saidi et al., 2016). Many factors contributed to the spread of electronic banking, the main reason being the widespread spread of the Internet, mobile phones, laptops, and various communication tools (Saif et al., 2022), and the increase in the number of Internet users around the world (Al-Malkawi et al., 2016). Artificial intelligence has also helped in the spread of electronic banks around the world (Al-Jarrah et al., 2024).

The growth of electronic business and high levels of security also contributed to the expansion of dealing with electronic banks (Basias et al., 2015). Systems integration led to the success of experiments in applying electronic banking services (Alghatani, 2015). On the other hand, the low level of technical problems helped spread, due to the reliance on modern technologies to build systems for the services provided, such as the Service-Oriented Architecture (SOA) system based on the desired benefits of electronic banking services (Siadat, 2019), and this requires the provision of services with high quality to achieve A sustainable competitive advantage, satisfying current customer needs, and anticipating future customers (Al-Wishah, 2022).

2.2 Benefits of e-banks

Electronic banking has many benefits for customers. Managing bank accounts electronically at any time and from anywhere (Adams et al., 2016), controlling bank balances, paying bills, transferring funds, purchasing goods, submitting loan applications, and saving time (Alhassany & Faisal, 2018; Al- Mansi, 2015). E-banks help to see the products, services and advantages offered by banks (Al-Ajam & Nor, 2013). In addition to contributing to the promotion of financial inclusion, by allowing everyone to access banking services (Mindara et al., 2022). On the other hand, banks benefit from providing electronic services by reducing operational and infrastructure costs (Siraye, 2014). The spread of electronic banks helps move employees into more efficient activities (Malkawi et al., 2016). Electronic banking also contributes to balancing technology with direct personal interaction (Alraja et al., 2016). Its role is prominent in increasing the level of profits, increasing customer confidence, and increasing the market space (Aladaileh et al., 2016).

2.3 Risk of e-banking

The Basel Committee has established principles for electronic banking, which cover board supervision, security controls, legal risk management, and reputational risks (Bank for international settlement, 2003). Therefore, it is necessary to activate the role of the Board of Directors in developing a risk management plan to identify and manage risks, and to take appropriate documentation procedures to provide security for electronic banking activities (Abdou et al., 2015). Despite these principles, risk management guidelines are still unstable, due to the novelty of electronic banks, their continuous development, and rapid technical changes (Abdou et al., 2015). The risks of electronic banks are diverse and variable, such as the risks of systems downtime, the security breaches, the spread of fraud, and the failure to protect confidential customer information (Pennathur, 2001). There are risks related to the surrounding environment as risks related to the quality of the Internet (Singh and Agnihotri, 2015). The risks lead to exposure of banks' reputation, loss of confidence and customer dissatisfaction with electronic banking services, and disruptions in the banking sector (Abdou et al., 2015).

2.4 Jordanian Islamic Banks

The Jordanian banking sector consists of 16 Jordanian banks and 7 foreign banks (Association Banks in Jordan, 2022a). Banks appeared in Jordan with the establishment of the Arab Bank in 1930, then banks spread, and the Central Bank of Jordan was established, and it began its activity in 1964 to supervise banks, and Jordanian banks are subject to Banking Law No. 28 of 2000 (Central Bank of Jordan, 2022). In 2023, the assets of the banking sector in Jordan are approximately 64 billion Jordanian dinars, deposits are approximately 43 billion Jordanian dinars, banking facilities are approximately 30 billion Jordanian dinars, and net profit is approximately 318 million Jordanian dinars (Association Banks in Jordan, 2023). On the other hand, Jordan Islamic Bank was established in 1978 as the first Islamic bank in Jordan. The Islamic banking sector in Jordan consists of 4 Islamic banks, 3 Jordanian Islamic banks: Jordan Islamic Bank (JIB), Islamic International Arab Bank (IIAB), and Safwa Islamic Bank (SIB), and one foreign bank, Al-Rajhi Bank (Association Banks in Jordan, 2022). Jordanian banks are governed by Articles 50-59 of Banking Law No. 28 of 2000 (Central Bank of Jordan, 2022). Jordanian Islamic banks have developed, as the assets of the Islamic banking sector in Jordan are approximately 10 billion Jordanian dinars, deposits are approximately 9 billion Jordanian dinars, banking facilities are approximately 7.3 billion Jordanian dinars, and net profit is approximately 98 million Jordanian dinars in 2023 (Association Banks in Jordan, 2023). Jordanian Islamic banks contribute to spreading Islamic banking awareness (Al Badarin et al., 2024).

2.5 E-banking in Jordan

Jordanian banks paid great attention to banking services. Because of its role in increasing returns and supporting competitiveness (Al-Rfou, 2013). Jordan Kuwait Bank was the first bank to offer electronic banking services in 2000, which was called Net Banker (Jordan Kuwait Bank, 2020). Jordanian banks have tried hard to stand out in a competitive sector, to meet the ever-evolving needs of customers, and to change the traditional work to reduce the operating costs of the bank (Abu Assi et al., 2014). Jordanian banks have continued to search for innovative ways to develop their electronic services (Rawwash et al., 2020). Many studies examined electronic banks in Jordan. The use of electronic banks in Jordan was low in old studies (Siam, 2006; Al-Smadi & Al-Wabel, 2011), and the use of electronic banks has increased in recent studies (Dabaghia, 2021; Rawwash et al., 2020; Anouze & Alamro, 2019). Due to the change in the nature of banking work resulting from technological development, Islamic banks in Jordan provided and developed electronic banking services, and tried to innovate in this field. Jordanian Islamic banks aimed at preserving customers and attracting new ones by meeting their needs, and reducing expected costs and risks. Jordan Islamic Banks provide their customers a lot of electronic services such as; CLIQ instant transfer, electronically updating customer data, displaying check details, stopping and activating instant debit cards, requesting financing, opening an electronic account and updating data and protecting electronic signature. They also provide private electronic services to companies; Bill viewing and collection services, automated clearing house, and direct transfers between customer accounts. To enhance and promote its digital position, the bank launched its application on various platforms such as; LinkedIn, Instagram, YouTube, Facebook, and Messenger. The Bank linked its services with the Middle East Network for Payment Services (MEPS), the Joint Jordanian Network for Automated Teller Machines (JONET), and the global Visa network outside Jordan (Jordan Islamic Bank, 2022; International Islamic Arab Bank, 2022; Safwa Islamic Bank, 2022).

3. Theoretical Framework and study Hypotheses

Based on the literature review, the study develops a Theoretical model to achieve its objectives. The model shows the effect of ease of use, perceived benefit, privacy and security, infrastructure, and awareness as independent variables on customer adoption of electronic banks as a dependent variable.

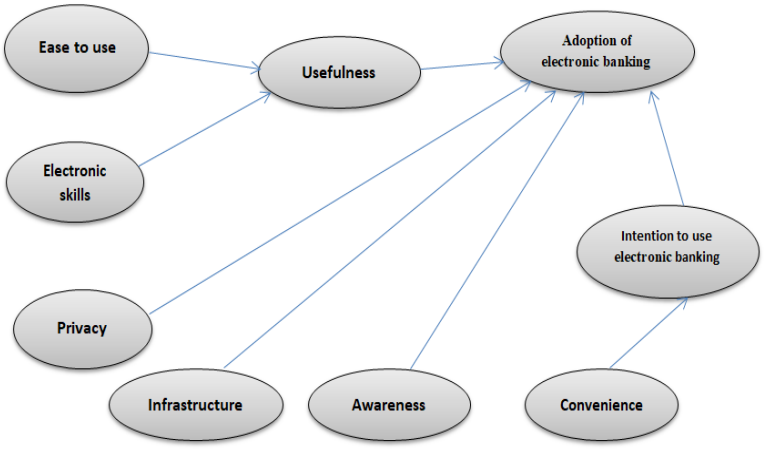

Fig. 1. Theoretical model

Adopted from (Sang, 2024; Rawwash et al., 2020; Anouze & Alamro, 2019; Alwan & Al-Zu'bi, 2016; Al-Smadi, 2012).

According to the Theoretical model, the following hypotheses were developed:

H_1: *Ease to use directly impacts E-banking usefulness.*
H_2: *Electronic skills directly impact E-banking usefulness*.
H_3: *Usefulness directly impacts adoption of E-banking.*
H_4: *Ease to use indirectly impacts adoption of E-banking through usefulness.*
H_5: *Electronic skills indirectly impact adoption of E-banking through usefulness.*
H_6: *Privacy directly impacts adoption of E-banking.*
H_7: *Infrastructure directly impacts adoption of E-banking.*
H_8: *Awareness directly impacts adoption of E-banking.*
H_9: *Convenience directly impacts Intention to use E-banking.*
H_{10}: *Intention to use electronic banking directly impacts adoption of E-banking.*
H_{11}: *Convenience indirectly impacts adoption of E-banking through Intention to use E-banking.*

4. Methodology and Research Design

The purpose of this study is to investigate the determinants of the use of electronic banking in Jordanian Islamic banks. In this study, the descriptive analytical research approach was adopted. The data was collected from a study sample by designing a questionnaire, and the study used statistical methods to analyze the data. The design of the questionnaire was based on The Technology Acceptance Model (TAM). TAM is derived from the Theory of Reasoned Action (TRA), a logical theory that posits that a person's perceptions of an object determine their attitude and behavior toward that object (Indrasaria et al., 2022). The Technology Acceptance Model was established by (Davis et al., 1989) and has become widespread. This model is the most used to predict the adoption of electronic banking services among customers (Alnemer, 2022). The TAM model is based primarily on perceived ease of use and perceived usefulness (Karjaluoto et al., 2021; Riza and Hafizi, 2020). Over time, the TAM model evolved by adding new variables to the model, such as trust in technology, social connection, demographic factors, and perceived barriers (Dash et al., 2011). The global index database (2017) indicates that the requirements of the TAM model are perceived ease of use and perceived benefit, with the model's ability to absorb other factors that depend on the nature of the country, the banking sector, and the customers**.** The questionnaire consisted of 3 sections; The first section was used to collect the demographic characteristics of the study sample, where the second and third are used to measure the constructs in the research model by using a five-point Likert scale, with options ranging from strongly disagree to strongly agree. The current study targets customers in Jordanian Islamic banks using a questionnaire distributed electronically and in person. There are (3) Islamic banks in Jordan. This study used the random sampling method to select the sample. Descriptive analysis is used to describe the characteristics of a sample. The means, standard deviations, direction, and percentage of the dependent and independent variables are presented. Furthermore, the relationship between the independent variables was examined through Pearson's correlation coefficients. Simple and multiple linear regression analysis were used to test the hypotheses. The study uses a five-point Likert scale: (strongly agree = 5, agree = 4, neutral = 3, disagree = 2 and strongly disagree = 1). Thus, the weighted average is computed with the length of the first period being 0.80, and thus, the weighted average for each choice will be given.

5. Results

The data analysis section includes the Demographic characteristics, the reliability and validity tests for the questionnaire, descriptive analysis of the study variables, testing the association between the variables, and testing the study hypotheses using regression analysis.

In total, it provides 470 valid questionnaires for analysis, 330 questionnaire forms were distributed personally to Islamic banks customers and (272) forms were returned (≈82%). (16) questionnaires were excluded due to the lack of seriousness of the respondents while filling out the questionnaire. Accordingly, only (256) questionnaires representing (≈78%) of the personally distributed questionnaires were valid for analysis. Also, 214 people responded electronically, bringing the total number of questionnaires.

5.1 Results of Demographic characteristics

As shown in Table 1, 55% of the respondents are male, 83% of them have good technology skills, more than 75% of them have a bachelor's degree at least, more than 88% of them are less than 50 years old, around 65% of them are employed in the public and private sectors, and more than 84% dealing with Islamic banks for 5 years at least.

Table 1
Demographic characteristics

	Item	Freq.	%		Item	Freq.	%
Gender	Male	257	55	**Bank**	JIB	244	52
	Female	213	45		IIAB	155	33
Age	Less than 30 years	110	23		SIB	69	15
	31-40	166	36	**Work**	Student	42	9
	41-50	142	30		Private-company employee	127	27
	More than 50 years	52	11		Government employee	179	38
Education	secondary or less	42	9		free business	52	11
	Diploma	74	16		retired	70	15
	Bachelor	268	57	**Duration of dealing**	Less than 5 years	75	16
	Postgraduate	86	18		5 – 10 years	160	34
Technology skills	I have	389	83		11 – 15 years	135	29
	I haven't	81	17		More than 15 years	98	21

5.2 Reliability Testing of the Research Instrument

Measurement of reliability is one of the important elements that can be taken into consideration when preparing a questionnaire. The current study uses a measure of internal consistency, through Cronbach's alpha, to perform a reliability test for the questionnaire. As shown in Table 2, the ratios of Cronbach's alpha coefficients express a high degree of reliability for all items of the questionnaire, as all the ratios of the variables were higher than (0.70); Thus, alpha coefficients were statistically acceptable for all sections of the questionnaire. The reliability score for the entire questionnaire is 0.92.

Table 2
Questionnaire reliability testing

Item	Alpha	Questions
Ease of use	0.89	3
Electronic skills	0.95	3
Usefulness	0.88	3
Privacy	0.94	3
Infrastructure	0.72	3
Awareness	0.84	3
Convenience	0.86	3
Intention to use of electronic banks	0.76	3
Adoption of electronic banks	0.84	3
All Variables	0.92	27

5.3 Validity testing of the research instrument

The Variance Inflation Factor (VIF) test and the Tolerance test are used to ensure that the collected data are valid for analysis and to verify that there is no linear relationship between variables that may affect the validity of the data analysis. As shown in table 3, all VIF values were less than 10, and all Tolerance values were greater than 0.10, which means that there is no multicollinearity problem, and the model is valid for analysis.

Table 3
Questionnaire validity testing

Item	VIF	Tolerance
Ease of use	0.745	1.342
Electronic skills	0.681	1.468
Usefulness	0.726	1.377
Privacy	0.812	1.232
Infrastructure	0.610	1.639
Awareness	0.967	1.034
Convenience	0.593	1.686
Intention to use of electronic banks	0.643	1.555
Adoption of electronic banks	0.609	1.642

5.4 Descriptive Statistics

The study uses descriptive statistics methods such as averages, standard deviations, percentage and direction for the sample's answers to the study question. Table 4 presents the descriptive statistics for the study variables, the overall average is 3.89 for ease of use, 3.84 for electronic skills, 4.12 for usefulness, 4.12 for Privacy, 4.05 for Infrastructure,.3.63 for Awareness, 4.15 for Convenience, 4.08 for intention to use of electronic banks, and 4.25 for adoption of electronic banks. According to the Likert scale, the score for all variables will be agree.

Table 4
Descriptive statistics

Item	Mean	S.D	%	direction
Ease of use	3.98	1.05	79.6	Agree
Electronic skills	3.84	1.04	76.8	Agree
Usefulness	4.12	1.11	82.4	Agree
Privacy	4.12	1.02	82.4	Agree
Infrastructure	4.05	0.98	81.0	Agree
Awareness	3.63	0.68	72.6	Agree
Convenience	4.15	1.06	0.83	Agree
Intention to use of electronic banks	4.08	0.78	81.6	Agree
Adoption of electronic banks	4.25	0.66	85.0	Agree

5.5 The correlation between the study variables

The study used the correlation coefficient to find the correlation matrix between the variables. Table (5) showed there are accepted relationships between the variables. The table show that there is no correlation which is higher than 80% between any of the study variables, where the highest correlation value reached 0.638 between use of electronic banks and awareness.

Table 5
Pearson correlation matrix

	EU	ES	U	P	INF	AW	CON	ITU	ADP
EU	1								
ES	-0.029	1							
U	0.254	-.001	1						
P	0.517	-0.048	0.419	1					
INF	0.459	0.023	0.359	0.456	1				
AW	0.359	0.137	0.266	0.344	0.527	1			
CON	0.254	-0.002	0.546	0.441	0.380	0.287	1		
ITU	0.486	0.003	0.391	0.562	0.594	0.540	0.398	1	
ADP	0.475	0.043	0.353	0.516	0.583	0.564	0.363	0.545	1

(* * P ≤ 0.01)

6. Testing of Hypotheses

This study uses path analysis to test the hypotheses, which applies the outcomes of the Partial Least Squares Structural Equation Modeling (PLS-SEM) model. The results shown in Table 6 and Fig. 2 indicate the suitability of the data for analysis. The Chi-square was equal to 1089.12 and it was also found standardized root mean square residual (SRMR) to be equal to 0.067, which is less than 0.1. This result indicates that the model expresses the proposed relationships.

H1 was supported with a beta of 0.534 and p-value of 0.000, indicating that Ease to use electronic banking directly impacts the usefulness of electronic banking. H2 was supported with a beta of 0.494 and p-value of 0.000, indicating that electronic skills directly impact usefulness of electronic banking. H3 was supported with a beta of 0.326 and p-value of 0.000, indicating that usefulness of electronic skills directly impacts adoption of electronic banking. H4 was supported with a beta of 0.082 and p-value of 0.029, indicating that ease to use indirectly impacts adoption of electronic banking through usefulness. H5 was supported with a beta of 0.071 and p-value of 0.033, indicating that electronic skills indirectly impact adoption of electronic banking through usefulness.

Table 6
The results of hypotheses testing

Hypothesis	Relationship	B	P-value	S.D	Decision
H1	Ease to use → usefulness.	0.534	0.000	0.062	Supported
H2	Electronic skills → usefulness.	0.494	0.000	0.041	Supported
H3	usefulness → adoption	0.326	0.000	0.056	Supported
H4	Ease to use → usefulness → adoption	0.082	0.029	0.038	Supported
H5	Electronic skills → usefulness → adoption	0.071	0.033	0.067	Supported
H6	Privacy → adoption	0.281	0.000	0.046	Supported
H7	Infrastructure → adoption	0.022	0.612	0.054	Rejected
H8	Awareness → adoption	0.408	0.000	0.036	Supported
H9	Convenience → Intention to use	0.578	0.000	0.061	Supported
H10	Intention to use E-banking → adoption	0.481	0.000	0.045	Supported
H11	Convenience → Intention to use → adoption	0.014	0.813	0.066	Rejected

Moreover, H6 was supported with a beta of 0.281 and p-value of 0.000, indicating that privacy directly impacts adoption of electronic banking. H7 was rejected with a beta of 0.022 and p-value of 0.681, indicating that infrastructure directly impacts adoption of electronic banking. H8 was supported with a beta of 0.408 and p-value of 0.000, indicating that awareness directly impacts adoption of electronic banking.

Furthermore, H9 was supported with a beta of 0.578 and p-value of 0.000, indicating that convenience directly impacts intention to use electronic banking. H10 was supported with beta of 0.481 and p-value of 0.000, indicating that intention to use electronic banking directly impacts adoption of electronic banking. H11 was rejected with a beta of 0.014 and p-value of 0.813, indicating that convenience indirectly impacts adoption of electronic banking through intention to use electronic banking.

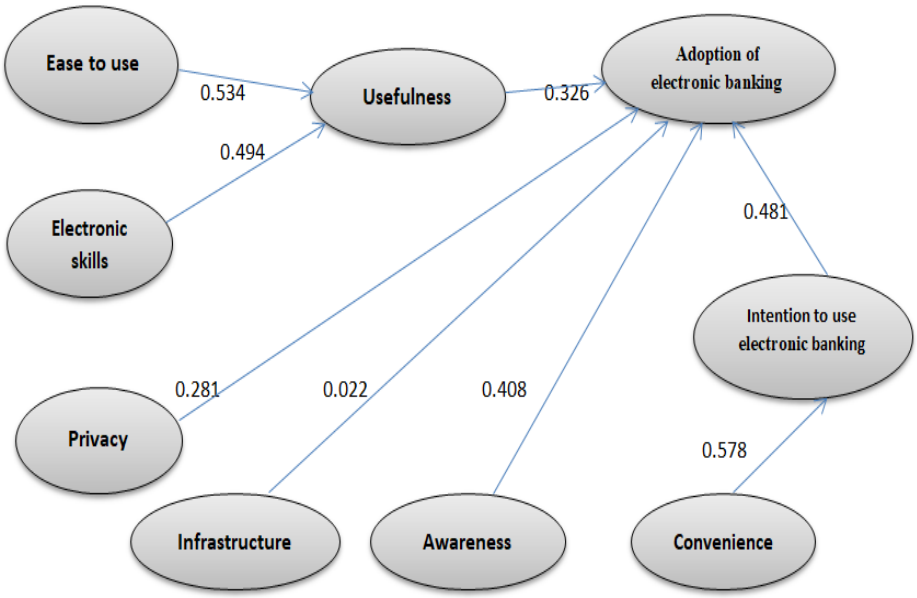

Fig. 2. Results of PLS-SEM model

7. Discussion

The results of the study showed that usefulness is positively affected by ease of use, and this supports the results of Rawwash et al. (2020), Anouze and Alamro (2019), Alwan and Al-Zu'bi (2016) and Abu-Assi et al. (2014) which means that the easier of using of electronic banks, the higher the level of usefulness achieved. The results of the study showed that usefulness is positively affected by electronic skills, and this supports the results of Rawwash et al. (2020) and Aladaileh et al. (2016), which means that higher user skills increase usefulness. The results of the study also showed that adoption of electronic banks is positively affected by usefulness, and this supports the results of Rawwash et al. (2020), Anouze and Alamro (2019), Mansour et al. (2016), Alwan and Al-Zu'bi (2016), Aladaileh et al. (2016), Abu-Assi et al. (2014) and Al-Rfou, (2013), this means that if the users expect to achieve usefulness, they will adopt the use of electronic banks. The results showed that the adoption of electronic banks is positively affected by ease to use and electronic skills through usefulness, and this supports the results of Alsamydai et al. (2014) and Arora (2022). Moreover, the results showed that adoption of electronic banks is positively affected by privacy, and this supports the results of Anouze and Alamro (2019), Aziz and Afaq (2018), Abu-Assi et al. (2014) and Al-Rfou (2013), this means that if electronic banks are characterized by a high degree of privacy, their opacity to users will increase. The results also showed that adoption of electronic banks is positively affected by awareness, and this supports the results of Anouze and Alamro (2019), Aziz and Afaq (2018), Abu-Assi et al. (2014) and Al-Rfou (2013), This means that if users have a high degree of awareness about electronic banks and their benefits, they will tend to rely on them to complete their banking transactions. Furthermore, the results showed that Intention to use electronic banking is positively affected by Convenience of users, and this supports the results of Anouze and Alamro (2019), Mansour et al. (2016). The results also showed that adoption of electronic banks is positively affected by Intention to use electronic banking, and this supports the results of Anouze and Alamro (2019), Mansour et al. (2016). Based on the results of the analysis, Islamic banks in Jordan can enhance users' adoption of electronic banks by simplifying electronic banking services so that they are easier to use, must work to enhance users' privacy, and pay attention to increasing customers' awareness of the importance of electronic banks.

References

Abdou, H., Hadjiantoni, E. and Derwin, G. (2015), E-banking and risk management: evidence from the Cypriot public sector banks, *Banks and Bank Systems, 10*(3), 18-28.

Abu-Assi, H. A., Al-Dmour, H. H., & Zu'bi, M. F. (2014). Determinants of internet banking adoption in Jordan. *International Journal of Business and Management*, *9*(12), 169-196. doi.org/10.5539/ijbm.v9n12p169

Adams, A. M., Bashiru, M., & Abdulai, I. A. (2016). Customer Satisfaction in the Banking Industry in Ghana: A Case of GCB Bank Limited in Wa Municipality. *Journal of Social Science Studies*, *3*(2), 217. doi.org/10.5296/jsss.v3i2.9528.

Ahmeti, F. and Prenaj, B. (2022). Determinants Affecting Consumer Acceptance and Adoption of Internet Banking in Developing Countries: The Case Study of Kosovo. *Economic Studies Journal*, *31*(6), 60-79.

Al Badarin, A., Al-Jarrah, M., Rababah, A., & ALotoom, A. (2024). Systematic and unsystematic determinants of liquidity risk in the Islamic banks in the middle east. *Uncertain Supply Chain Management*, *12*(3), 1399-1408. doi: 10.5267/j.uscm.2024.4.011.

Aladaileh, R., Almobaideen, H. and Al-smairat, M. (2016), The Factors Affecting the Use of E-banking Services from the Customers' Point of View: A Field Study in the Jordanian Southern Region, *Jordan Journal of Business Administration*, *12*(3), 531-545.

Al-Ajam, A. S., & Nor, K. (2013). Influencing factors on behavioral intention to adopt Internet banking service. *World Applied Sciences Journal*, *22*(11), 1652-1656. doi: 10.5829/idosi.wasj.2013.22.11.2896.

Alghatani, A. (2015). A literature review of the factors affecting service oriented architecture adoption in e-banking. *International Journal of Engineering and Innovative Technology, 5*(3), 85–93.

Alhassany, H., & Faisal, F. (2018) Factors influencing the internet banking adoption decision in North Cyprus: an evidence from the partial least square approach of the structural equation modeling. *Financial Innovation*, *4*(29). doi.org/10.1186/s40854-018-0111-3.

Alhawamdeh, L., & Bardai, B. (2017), Determinants of The Internet Islamic Banking Services Adoption in Jordan, *Journal of Islamic Economics and Business*, 2(2), 103–111. doi: 10.24042/febi.v2i2.1878.

Al-Jarrah, M. F., Al Badarin, A. M. and Almohammad, M. Z. (2024). The role of artificial intelligence in developing the accounting system in Jordanian Islamic banks. *International Journal of Data and Network Science*, *8*(4), 2477–2482. doi: 10.5267/j.ijdns.2024.5.010.

Al-Malkawi, H., Mansumitrchai, S., & Al-Habib, M. (2016), Online banking in an emerging market: evidence from Saudi Arabia, *International Journal of Electronic Finance*, *7*(3/4), 1-17. doi.org/10.1504/IJEF.2016.083498.

Al-Mansi, I., & Amany, B. S. (2015). The impact of networking and communications resources to improve the quality of services provided to customers in the Jordanian Insurance Companies. *Journal Of Information Engineering And Application*, *5*(1), 1-7.

Alnemer, H. (2022). Determinants of digital banking adoption in the Kingdom of Saudi Arabia: TAM approach. *Digital Business, 2*(2), 1-8. doi.org/10.1016/j.digbus.2022.100037.

Alraja, M., Salim, B., Uddin, M., Yousoof, M. (2016), The Adoption of Internet Banking: Clients' Perspective in Oman, *International Review of Management and Marketing*, *6*(4), 926-929.

Al-Rfou, A. N. (2013). The Usage of Internet Banking Evidence From Jordan. *Asian Economic and Financial Review. 3*(5). 614-623.

Al-Smadi, M. (2012). Factors Affecting Adoption of Electronic Banking: An Analysis of the Perspectives of Banks' Customers. *International Journal of Business and Social Science*, *3*(17), 294-309.

Al-Smadi, M. O., & Al-Wabel, S. A. (2011). The Impact of E-Banking on The Performance of Jordanian Banks. *Journal of Internet Banking and Commerce*, 16(2).

Alwan, H. & Al-Zu'bi, A. (2016). Determinants of Internet Banking Adoption among Customers of Commercial Banks: An Empirical Study in the Jordanian Banking Sector. *International Journal of Business and Management*; *11*(3). 95-104. doi.org/10.5539/ijbm.v11n3p95.

Al-Wishah, R., Al-Weshah, G., Abu-Hamour, H. and Alzubi, K. (2022) Service Quality and Customer Loyalty: Evidence from Jordanian Banks, *Jordan Journal of Business Administration*, *18*(4), 457-476. doi.org/10.35516/jjba.v18i4.454-457.

Anouze, A. M. & Alamro, A. S. (2019). Factors affecting intention to use e-banking in Jordan. *International Journal of Bank Marketing*, *37*(5), 86-112. doi.org/10.1108/IJBM-10-2018-0271.

Arora, R. (2022). Perceived Usefulness, Perceived Trust And Ease Of Use In Adoption Of Online Banking Services. *Journal of Pharmaceutical Negative Results*, 1-7.

Association Banks in Jordan, (2022a). *Annual Report*, Association Banks in Jordan Publications, Amman.

Association Banks in Jordan, (2023). *The most important banking developments until the end of 2023*, Association Banks in Jordan Publications, Amman.

Aydogan, S., Van Hove, L. (2017). Determinants of internet banking usage: survey evidence for Belgium. *Accountancy & Bedrijfskunde*, *2*, 19-36.

Bank for international settlement (2003). *Basel committee on banking supervision Risk management principles for electronic banking*. http://www.bis.org/publ/bcbs98.htm [accessed on 20th May. 2024].

Basias, N., Themistocleous, M., & Morabito, V. (2015). A decision making framework for SOA adoption in e-banking: A case study approach. *Journal of Economics Business and Management*, *3*(1), 48–53. doi:10.7763/ JOEBM.2015.V3.154.

Central Bank of Jordan, (2022), *Annual Report*, Central Bank of Jordan Publications, Amman.

Dabaghia, M. N. (2021), The Adoption of E-Banking in Jordan and Its Impact on Jordanian Customers, *Journal of Legal, Ethical and Regulatory Issues*, *24*(6), 1-12.

Dash, M., Mohanty, A. K., Pattnaik, S., Mohapatra, R. C., & Sahoo, D. S. (2011). Using the TAM model to explain how attitudes determine adoption of internet banking. *European Journal of Economics, Finance and Administrative Sciences*, *36*(1), 50–59.

Davis Jr, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*, (Doctoral dissertation, Massachusetts Institute of Technology).

Indrasari, A., Nadjmie, N., & Endri, E. (2022). Determinants of satisfaction and loyalty of e-banking users during the COVID-19 pandemic. *International Journal of Data and Network Science*, *6*(2), 497-508. doi: 10.5267/j.ijdns.2021.12.004.

Intana, M., Chansa–ngavej, C., & Changchit, C. (2013). Factors encouraging the internet banking adoption in Thailand. *International Journal of Electronic Finance*, *7*(3-4), 196-212. doi: 10.1504/IJEF.2013.058602.

International Islamic Arab Bank (2022). *Annual Report*. International Islamic Arab Bank Publications, Amman.

Johar, R., & Suhartanto, D. (2019). The Adoption of Online Internet Banking in Islamic Banking Industry, *IOP Conference: Materials Science and Engineering*, *662*(3), 1-7. doi:10.1088/1757-899X/662/3/032032.

Jordan Islamic Bank (2022). *Annual Report*. Jordan Islamic Bank Publications, Amman.

Jordan Kuwait Bank (2020). *Annual Report*. Jordan Kuwait Bank Publications, Amman.

Karjaluoto, H., Glavee-Geo, R., Ramdhony, D., Shaikh, A. A., & Hurpaul, A. (2021). Consumption values and mobile banking services: Understanding the urban–rural dichotomy in a developing economy. *International Journal of Bank Marketing*, *39*(2), 272–293. doi.org/10.1108/IJBM-03-2020-0129.

Kose, A. (2009). Determination of reasons affecting the use of internet banking through logistic regression analysis. *Journal of Global Strategic Management*, *6*, 1-10.

Malhotra, P., & Singh, B. (2007). Determinants of internet banking adoption by banks in India. *Internet Research*, *17*(3), 323-339. doi.org/10.1108/10662240710758957.

Mansour, I. H. F., Eljelly, A. M., & Abdullah, A. M. (2016). Consumers' attitude towards e-banking services in Islamic banks: the case of Sudan. *Review of International Business and Strategy*, *26*(2), 244-260. doi.org/10.1108/RIBS-02-2014-0024.

Mehmood, N., Shah, F., Azhar, M., & Rasheed, A. (2014). The factors effecting e-banking usage in Pakistan. *Journal of Management Information System and E-commerce*, *1*(1), 57-94.

Mindra, R., Bananuka, J., Kaawaase, T., Namaganda, R., & Teko, J. (2022). Attitude and Islamic banking adoption: moderating effects of pricing of conventional bank products and social influence. *Journal of Islamic Accounting and Business Research*, *13*(3), 534-567. doi:10.1108/JIABR-02-2021-0068.

Mohd Thas Thaker, M. A. B., Amin, M. F. B., Mohd Thas Thaker, H. B., & Allah Pitchay, A. B. (2019). What keeps Islamic mobile banking customers loyal?. *Journal of Islamic Marketing*, *10*(2), 525-542. doi.org/10.1108/JIMA-08-2017-0090.

Pennathur, A. (2001). "Clicks and bricks", e-Risk Management for banks in the age of the Internet, *Science Direct*, *25*(11), pp. 2103-2123. doi.org/10.1016/S0378-4266(01)00197-2.

Rawwash, H., Masad, F., Enaizan, O., Eneizan, B., Adaileh, M., Saleh, A., & Almestarihi, R. (2020). Factors affecting Jordanian electronic banking services. *Management Science Letters*, *10*(4), 915-922. doi: 10.5267/j.msl.2019.10.004.

Raza, S. A., & Hanif, N. (2013). Factors affecting internet banking adoption among internal and external customers: a case of Pakistan. *International Journal of Electronic Finance*, *7*(1), 82-96. doi: 10.1504/IJEF.2013.051746.

Riza, A. F., & Hafizi, M. R. (2020). Customers attitude toward Islamic mobile banking in Indonesia: Implementation of TAM. *Asian Journal of Islamic Management, 1*(2), 75-84. doi.org/10.20885/ajim.vol1.iss2.art1.

Safwa Islamic Bank (2022). *Annual Report*. Safwa Islamic Bank Publications, Amman.

Saidi, N. A., Azib, N. A., Amran, N. A., Sulham, N. E. S., Anuar, N. F. F., & Saidi, N. (2016). Determinants for adoption of e-banking among bank's customers. *International Journal of Accounting, Finance and Business*, *1*(2), 37-44.

Saif, M. A., Hussin, N., Husin, M. M., Alwadain, A., & Chakraborty, A. (2022). Determinants of the intention to adopt digital-only banks in Malaysia: The extension of environmental concern. *Sustainability*, *14*(17), 11043. doi.org/10.3390/su141711043.

Siadat, S. H., Shokohyar, S., & Shafahi, S. (2019). SOA adoption factors in e-banking: An empirical analysis from the practical perspective. *International Journal of Information Systems in the Service Sector (IJISSS)*, *11*(1), 25-39. doi: 10.4018/IJISSS.2019010102.

Siam, A. Z. (2006). Role of the electronic banking services on the profits of Jordanian banks. *American Journal of Applied Sciences, 3*(9), 1999-2004. doi.org/10.3844/ajassp.2006.1999.2004.

Singh, R.K., & Agnihotri, A. (2015). E-banking strategies and consumers' perception towards accepting internet banking: a secondary approach, *Innovative journal of business and management*, *4*(4), 68-76. doi:10.15520/ijbm.vol4.iss4.28.

Siraye, Z. (2014), Customers' adoption of electronic banking service channels in Ethiopia: an integration of technology acceptance model and perceived risk with theory of planned behavior, *International Journal of Electronic Finance*, *8*(1), 21-34. doi: 10.1504/IJEF.2014.063993.

The Global Findex Database (2017). *Measuring Financial Inclusion and the Fintech Revolution.* https://microdata.worldbank.org/index.php/catalog/3324.

Yee, B. Y., & Faziharudean, T. M. (2010). Factors affecting customer loyalty of using Internet banking in Malaysia. *Journal of Electronic Banking Systems*, *21*, 2010.doi: 10.5171/2010.592297.