A Structural Equation Modelling Approach to the Examination of Bank Customers' Behavioral Intention Antecedents to Adopt Internet Banking in Kurdistan

Bawan Yassin sabir [1], Hassan Mahmood Aziz[2] , Kovan Omar Hasan[3]

, Karwan Ismail Abdulrahman[4] , Azhy Akram Aziz[5] , Barzan Omar Ali[6]

and Bayar Gardi[7]

[1]Department of accounting, Kurdistan technical institute, Sulaimaniya, Kurdistan Region - Iraq

[2, 4, 7] Department of Accounting, College of Administration and Financial Sciences, Knowledge University, Erbil, Kurdistan Region-Iraq.

[3] Accounting Dep, College of business and administration, Erbil polytechnic University, Erbil, Kurdistan Region – Iraq

[5] Media Dep, College of business and administration, Erbil polytechnic University, Erbil, Kurdistan Region – Iraq

[6] Accounting dep., College of Administration & Economics, Lebanese French university, Erbil, Kurdistan Region – Iraq

***Abstract*—The study aims to determine and test the significance of specific behavioral antecedents influencing the adoption of internet banking by bank customers in Erbil, Kurdistan. The study focuses on studying the behavioral antecedents of bank customers of the top-three 2021 banks ranked best in terms of banking services in Erbil, Kurdistan. As a result, 283 questionnaire responses collected from bank customers were used in modelling a structural equation model essential for analyzing the structural influence of each behavioral antecedent on the adoption of internet banking. The results of the study revealed that the adoption of internet banking products and services in Kurdistan is mainly shaped around security and reliability, bank customers' trust, habits and attitudes, facilitating conditions, effort expectancy and performance expectancy behavioral antecedents. The effects of perceived website usability, hedonic motivation and social influence on the adoption of internet banking were observed as insignificantly positive. Practically, the implications demand that bank managers engage in a major innovative drive aimed at improving internet banking features, usability, performance, reliability and security. The study's contributions direct policymakers and bankers into structuring internet banking products and services to specifically meet bank customers in Kurdistan's needs, wants and preferences. On a theoretical level, the study advances propositions, implications and testing of the UTAUT, whose application in Kurdistan is academically sidelined.**

Keywords: **Adoption, behavioral intentions, internet banking, structural equation modelling**

INTRODUCTION

This Technological developments have been increasing and significantly spreading from one sector to the other. One of the key sectors that have witnessed a tremendous amount of technological innovations and developments is the banking sector, especially with the advent and proliferation of internet banking services. With increased globalization initiatives being promoted in Kurdistan, internet banking developments have continued to increase on a large scale. As such, the government of Kurdistan has been emphasizing the importance of promoting banking sector development and innovation activities to facilitate and enhance financial intermediation by Kurdish banks (Hamakhan, 2020). Studies supporting the adoption of internet banking cite the importance of conducting transactions at any point in time and place (Jiménez & Díaz, 2019; Yuen, Yeow & Lim, 2015). Others contend that it contributes towards adding to customer value (Amene, 2015; Inder, Sood & Grima, 2022) with added improvements in customer power (Inder, Sood & Grima, 2022).

Nonetheless, the adoption of internet banking is influenced by various factors and an interplay of one or more combined factors can either promote or hinder the adoption of internet banking. Hence, there is an insatiable demand for contemporary studies exploring such matters in different

Polytechnic Journal of Humanities and Social Sciences
Volume 5 No. 1 (2024)
Regular research paper: Published 8th February 2024

contexts and situations. However, the major challenge surrounding internet banking developments in Kurdistan is that its adoption is still in its infancy stages. This entails that behavioural antecedents influencing its adoption are most likely to vary in influence. For instance, Benamati, Serva and Fuller (2010) contend that the influence of behavioural antecedents like trust, habit and attitude, social influence and hedonic motivation is highly prominent at the introductory stage compared to other adoption stages. Some studies opine that the influence of antecedents such as security and reliability, and perceived website usability is presumed to be significant in be high at advanced stages (Casaló, Flavián & Guinalíu, 2008; Inder, Sood & Grima, 2022). As a result, this enhances disparity and hinders attempts to establish consensus on the long-standing debate on the adoption of internet banking, especially when each behavioural antecedent's effects are presumed to differ in significance with regard to financial and economic development (Jiménez & Díaz, 2019) as well as the spread and adoption of internet banking services (Inder, Sood & Grima, 2022). Hence, it is an interesting inquiry that not all behavioural antecedents influencing the adoption of internet banking will hold valid and significant effects in an Islamic financial sector whose entire Kurdish economy is still emerging from various social, political and economic challenges like the 2008 and 2016 financial crisis (Faiq, 2021). This is of notable importance as a wide number of existing ideas are derived from developed economies like the United States (Yuen, Yeow & Lim, 2015), emerging economies like India (Yadav, Chauhan & Pathak, 2015) and less developed economies like Ghana (Amene, 2015). Thus, replicating such studies in Kurdistan can prove to be a daunting task which demands further examinations. Hence, the scientific contributions of this study are embedded in the study's attempt to replicate similar studies in Kurdistan but using robust and detailed methods involving the application of structural equation modelling to analyse the structural connections between the identified behavioural antecedents. Given that the Unified Theory of Acceptance and Use of Technology (UTAUT) places huge importance on 9 dimensions, dimensions (security and reliability, perceived website usability, trust, experience, habit and attitude, facilitating conditions, hedonic motivation, social influence, effort expectancy, and performance expectancy (Jiménez & Díaz, 2019; Inder, Sood & Grima, 2022; Venkatesh 2000; Yuen, Yeow & Lim, 2015), validating the influence of these factors in a different contextual financial and economic situations is essential for theoretical and empirical developments. As a result, the study aims to determine and test the significance of specific behavioural antecedents influencing the adoption of internet banking by bank customers in Erbil, Kurdistan.

Practically, the implications demand that bank managers engage in major innovative drives aimed at improving internet banking features, usability, performance, reliability and security. The study's contributions direct policymakers and bankers into structuring internet banking products and services to specifically meet bank customers in Kurdistan's needs, wants and preferences. On a theoretical level, the study advances propositions, implications and testing of the UTAUT, whose application in Kurdistan is academically sidelined.

I. 2. Literature review

II. 2.1 Theoretical literature review

With various theories on consumer behavior in play, the significance of the UTAUT is hard not to mention. From its predecessor, the Technology Acceptance Model (TAM), the UTAUT is instrumental in enhancing understanding of why consumers may adopt and choose to behave in a specific manner towards the introduced technology or information systems (Venkatesh 2000). Synonymously, when applied in the context of internet banking, the UTAUT presumes that consumers'' perceived utility of internet banking is what drives and fosters high levels of adoption of internet banking (Venkatesh & Davis, 2000). With the prevalence of numerous geographical barriers and time constraints, it is inevitable that bank customers will find it beneficial to adopt internet banking. The importance of internet banking in the new millennium has proved vital amid a rise in globalization, financial crises, financial development and innovation. Moving on, applying the UTAUT in this study paves way for understanding how complexities and challenges experienced when using internet banking services can hinder its adoption. As such, the UTAUT is coined on the belief that consumers'' perceived ease of use influences the adoption of technology, especially when they find it challenging to put it to effective use (Inder, Sood & Grima, 2022; Venkatesh 2000). Consequently, the UTAUT implies that more customers are inclined to use internet banking products and services if they find it easy to use them.

The major distinguishing factor that distinguishes the UTAUT from TAM and supports its inclusion in this study is the notion that the UTAUT attaches huge significance to external factors like social influence (Venkatesh 2000) and considers it to play an instrumental role in determining people's attitude towards the introduced technology or information systems (Venkatesh & Davis, 2000). As such, it becomes apparent that bank customers will have the attitude and intention to use internet banking products and services once their (1) perceived benefits, (2) perceived ease of use and (3) attitudes towards internet banking are positively high.

Nonetheless, both perceived benefits, ease of use and attitudes are unique concepts with numerous determinants demanding further examination. Hence, relying on the mere application of theoretical ideas obscures novel and detailed information about the exact factors or behavioral antecedents driving the adoption of internet banking. This can be supported by Inder, Sood and Grima's (2022) ideas which uncover that factors like trust, Facilitating Conditions and Effort Expectancy are often overlooked by several theoretical frameworks on consumer behavior, especially the TAM and the UTAUT. Hence, it further becomes vital to explore related studies to uncover more details about how these antecedents interact together to influence the adoption of internet banking,

especially in an Islamic banking context of a Middle eastern country that has not been given due academic consideration. Thus, the next section explores the related empirical studies on internet banking.

III. 2.2 Empirical literature review

Various empirical examinations have managed to draw distinct and numerous findings about the interplay between internet banking and behavioral antecedents. For instance, from an earlier examination by AlQudah (2014) that applies the TAM in assessing the contributions of the Moodle system to its users and decision makers to an investigation by Sharma et al. (2020) on the behavioral intention to adopt IB by individuals in Fiji, social influence, facilitating environments, perceived ease of use, effort expectancy and levels of performance expectancy are listed as key determinants of internet banking adoption.

In an attempt to develop and test a framework analyzing factors influencing the customers' intents and adoption of internet banking among bank customers in Jordan, Alalwan et al. (2018) applied the UTAUT. They found that social influence has no significant impact on behavioral intention. However, it was discovered that perceived risk, price value, hedonic motivation, EF, and PE have a significant impact on behavioral intention. Practically, their findings denote the inevitable diversity in the influence of behavioral antecedents and social factors calling for further examinations of internet banking issues and developments in other contexts and countries. Thereby, scientifically justifying the execution of this study together with initiatives aimed at replicating studies in different contexts, which has not been the case with several studies (Aboobucker & Bao, 2018; Faiq, 2021; Inder, Sood & Grima, 2022; Jiménez & Díaz, 2019; Yadav, Chauhan & Pathak, 2015; Yasin et al., 2020)

Aboobucker and Bao (2018) broadened further internet banking antecedent examinations in Sri Lanka to encompass online usability, perceived risk, perceived trust, and security and privacy. Again, variations in the significance of influence were observed as website usability and perceived trust was established as the main antecedents significantly hindering internet banking. However, perceived risk, as well as security and privacy were not of huge concern to bank customers when adopting internet banking. Similarly, attempts by Jiménez and Díaz (2019) to ascertain the influence of internet banking determinants on the adoption of IB in Spain, uniquely illustrated the frequency of operation of banking services, use of ATMs, employment status, income level, gender and higher education level as key determinants of internet banking. Again, these findings reinforce the notion that behavioral antecedents vary according to various social, economic, technological and demographic elements. As such, the unique context of Kurdistan in which the Islamic banking background, and financial and economic factors are at play, will have a distinct influence on customers' acceptance of internet banking.

Dianat et al. (2019) conducted an analysis of how users' personal characteristics on website usability and satisfaction vary according to Web design qualities (personalization, structure, navigation, layout, search and performance) using a sample of 798 online banking users in Iran. Their findings were contrary to suggestions denoting that website design, gender, age and Web usage experience insignificantly influence website usability and satisfaction (Aboobucker & Bao, 2018). Nonetheless, such findings are vital and can redirect redirecting internet banking activities, products and services to improve website usability and happiness by making innovative changes to Web design elements (notably Web structure and layout).

Inder, Sood and Grima (2022) provided much broader insight into all the possible behavioral antecedents influencing the adoption of internet banking. Unlike Aboobucker and Bao (2018) who restricts the antecedents to online usability, perceived risk, perceived trust, and security and privacy, and Dianat et al. (2019) who limits them to website design, gender, age and Web usage experience. Inder, Sood and Grima (2022) list the antecedents as (security and reliability, perceived website usability, trust, experience, habit and attitude, facilitating conditions, hedonic motivation, social influence, effort expectancy, and performance expectancy. As a result, this study replicates and extends Inder, Sood and Grima (2022) intending to test the validity of their influence in the context of Kurdistan's banking sector. In line with this review, the following conceptual model is proposed;

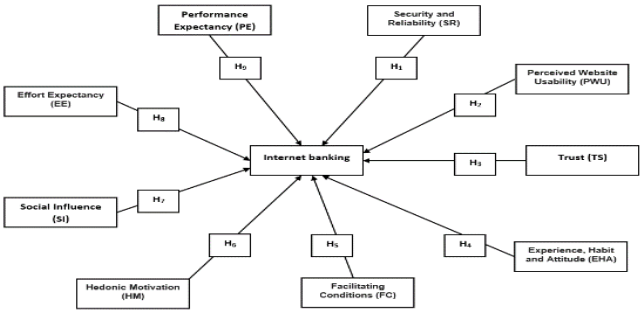

Figure 1. *Conceptual model*

3. Methodology

The study applied a Structural Equation Modelling (SEM) approach with the aim of ascertaining structural connections between internet banking antecedents (Hooper, Coughlan & Mullen, 2008; MacLean & Gray, 1998). Additionally, such a decision was motivated by attempts to validate propositions about the possible moderating effects between the behavioral antecedents as methods applied in previous related such as interviews (Chen, 2014), descriptive analysis (Abu-Assi, Al-Dmour & Zu'bi, 2014) and independent t-test (Foon & Fah, 2011) are incapacitated to provide the required empirical depth. Meanwhile, with the growing number of individuals adopting internet banking in Erbil, which had an internet penetration in Iraq of 75.0% in January 2021 (Kemp, 2021) determining and testing the connections and significance of the behavioral antecedents influencing such adoption becomes

vital. Additionally, this is instrumental for devising practical banking solutions capable of supporting financial innovation and development in Kurdistan, which is still trying to recover from the effects of the 2008 financial crisis (Faiq, 2021).

- **3.1 Population and sampling procedures**

The study population is based on three major banks in Erbil ranked by the Ministry of Industry and Finance in 2021 as the top-three banks best in terms of banking services quality. The banks were also selected based on their ability to provide internet banking services to their customers. Consequently, a judgmental sampling procedure was applied in determining the number of bank customers. Thus, 350 5-minute questionnaires were distributed to customers of the three banks according to their rankings in the ratio of 140:120:100, and 283 responses were collected. The 283 collected responses comprised 159 male bank customers and 124 female bank customers with the largest number (38.16%) being in the age group of 18-25 years. This denotes that there is a high usage of internet banking among young people in Erbil as opposed to elderly people (42 years and above; n=33: 11.66%). Thus, possible banking strategies would be to further target young customers and expand marketing activities to encompass elderly individuals. Table 1 shows that internet banking is mainly used for business transactions (n=88), online shopping (n=83), and other personal uses (n=64) with a lower number of bank customers in Erbil using it for educational transactions (n=48). These insights direct bank managers into practically broadening internet banking to additional services required by customers.

Table 1. Demographic details

[1]	Variable	[2]	Description	[3]	Count	[4]	Percentage
[5]	Gender	[6]	Male	[9]	159	[12]	56.18%
		[7]	Female	[10]	124	[13]	43.82%
		[8]	Total	[11]	283	[14]	100
[15]	Age group	[16]	18-25 years	[21]	108	[26]	38.16%
		[17]	26-33 years	[22]	100	[27]	35.34%
		[18]	34-41 years	[23]	45	[28]	15.90%
		[19]	42 years and above	[24]	33	[29]	11.66%
		[20]	Total	[25]	283	[30]	100
[31]	Use of internet banking	[32]	Online shopping	[37]	83	[42]	29.33%
		[33]	Educational transactions	[38]	48	[43]	16.96%
		[34]	Business transactions	[39]	88	[44]	31.10%
		[35]	Other personal uses	[40]	64	[45]	22.16%
		[36]	Total	[41]	283	[46]	100

- **3.2 Data collection tools**

Questionnaires were administered to 350 bank customers of the top-three 2021-rated banks in Erbil. The questionnaire was developed using a combination of review literature and templates provided by the UTAUT model (Venkatesh et al. 2003; Venkatesh et al. 2012). The questionnaire comprised nine dimensions (Security and Reliability (SR), Perceived Website Usability (PWU), Trust (TR), Experience, Habit and Attitude (EHA), Facilitating Conditions (FC), Hedonic Motivation (HM), Social Influence (SI), Effort Expectancy (EE), and Performance Expectancy (PE). Each dimensional construct was using a five-point Likert scale (1=strongly disagree to 5=strongly agree.

- **3.3 Data analysis procedures**

Factor analysis was applied in determining which of the behavioral antecedents' constructs were related (Bandalos & Finney, 2018). As per Shrestha's (2021) guidelines, constructs with a factor loading of at least 0.70 were considered related and capable of providing a valid understanding of how the selected 9 dimensions influence the adoption of internet banking. This was followed estimation of a path analysis crucial in depicting connections between the adoption of internet banking and the selected behavioral antecedents (Barrett, 2007). Discriminant validity was carried out using the Average Variance explained (AVE) on the belief that discriminant validity is established when the variables' AVE exceeds 0.50 (Barrett, 2007). Convergent validity was tested using the Fornell-Lacker method. Concerning the reliability of the model variables, Cronbach's alpha, the composite reliability tests were applied, and a benchmark of 0.70 was used for assessing the constructs' reliability (Hooper, Coughlan & Mullen, 2008). The study further proceeded to examine the estimated SEM's fitness and robustness using the Standardized Root Mean Square Residual (SRMR), Chi-square test, and Normed Fit Index (NFI), (Barrett, 2007; Hooper, Coughlan & Mullen, 2008).

- **3.4 Variable description and hypothesis development**
- **3.4.1 Security and reliability**

Studies have set a common ground concerning the importance of security and reliability, and consider them vital for enhancing the adoption of internet banking (Benamati, Serva & Fuller, 2010; Casaló, Flavián & Guinalíu, 2008). Inder, Sood and Grima (2022) echoed similar sentiments and asserted that they strengthen privacy, safety and reliability aspects of internet banking and thus, causing high internet banking adoption among bank customers. Chiemeke et al. (2006) connected improvements in security and reliability and their positive influence on the adoption of internet banking to improvements in customer satisfaction. Subsequently, this denotes a positive influence emanating from security and reliability to internet banking expressible in the form of a hypothesis as follows;

H_1: An improvement in security and reliability features of internet banking has a positive significant effect on the adoption of internet banking.

- **3.4.2 Perceived website usability**

Following the propositions laid forth by the UTAUT, the importance of perceived website usability is instrumental for bank customers to adopt more internet banking products and services (Yadav, Chauhan & Pathak, 2015). An increasing body of literature cites that it stirs major improvements in customer satisfaction and attributes an increase in the adoption

of internet banking products and services to stirs major improvements in customer satisfaction (Abdullah et al., 2016; Alwan et al., 2016; Inder, Sood & Grima, 2022). This, therefore, leads to the formulation of the following hypothesis;

H_2: An improvement in perceived website usability has a positive significant effect on the adoption of internet banking.

- **3.4.3 Trust**

Trust has and is always the key that drives customers' attitudes and behavior toward internet banking. Hence, along similar lines, Ameme (2015) noted that lack of trust hinders the adoption of internet banking. From a different perspective, Aboobucker and Bao (2018) and Benamati, Serva and Fuller (2010) contend that efforts aimed at boosting trust through activities such as reliable transactions, multiple authentication channels and internet security tend to boost the adoption of internet banking among customers. In that regard, it, therefore, becomes evident that there is a positive influence emanating from trust to internet banking adoption expressible in the form of a hypothesis as follows;

H_3: An improvement in bank customers' trust in internet banking has a positive significant effect on the adoption of internet banking.

- **3.4.4 Experience, habit, and attitude**

High internet banking activity usage revolves around customers' and aligning studies show that this trend will continue following an increase in learning and changing behavioral patterns by bank customers (Abdullah et al., 2016; Alwan et al., 2016; Inder, Sood & Grima, 2022). Thus, with aspects like feelings being connected to attitude and habits indicating satisfaction, it is evident that positive changes in experience, attitudes and habits will drive a high adoption of internet banking services by bank customers. Moreover, there is a consensus that barriers to the adoption of internet banking can be minimized by positive changes in users' experiences, attitudes and habits (Abdullah et al., 2016; Alwan et al., 2016; Inder, Sood & Grima, 2022). Thus, it can be inferred in the form of a hypothesis as follows;

H_4: An improvement in internet banking users' experience, attitudes and habits has a positive significant effect on the adoption of internet banking.

- **3.4.5 Facilitating conditions**

Banks with appropriate infrastructure and technical expertise are well poised to lure a substantial number of customers to use their internet banking services. This is because appropriate infrastructure and technical expertise are vital for solidifying and improving customer relations (Aboobucker & Bao, 2018) as well as enhancing customer satisfaction (Dianat et al., 2019). Hence, the presence of facilitating conditions provides an assurance to customers that their concerns will be well taken of in the event that they encounter challenges and problems with the banks' internet banking services. Besides, other facilitating conditions such as bank customers' ease and knowledge of computers (Jiménez & Díaz, 2019) and awareness of internet banking services (Faiq, 2021) are said to play an important role in influencing the adoption of internet banking. In line with this observation, the following supporting hypothesis will be tested;

H_5: An improvement in internet banking facilitating conditions has a positive significant effect on the adoption of internet banking.

- **3.4.6 Hedonic motivation and social influence**

According to Faiq (2021), hedonic motivation refers to how customers feel enjoyment or pleasure while using technology. Studies incorporating hedonic motivation as a behavioural antecedent consider it as having a significant role in technology adoption and acceptance (Alalwan et al., 2018; Bandalos & Finney, 2018). Other supporting studies highlight that its effects on the acceptance and adoption of technology are positively significant because it portrays customers' perceived enjoyment (Benamati, Serva & Fuller, 2010; Casaló, Flavián & Guinalíu, 2008). Along similar lines, Yadav, Chauhan, and Pathak (2015) noted that hedonic motivation effectively influences the acceptance and adoption of technology when social influence is relatively high. However, Inder, Sood and Grima (2022) opine that social influence is a distinct variable with distinct effects on the acceptance and adoption of technology. As such, family, friends and other social groups and members in influential circles tend to influence the acceptance and adoption of technology. It is no doubt that with the fast-paced technological innovations being observed together with electronic word-of-mouth, more customers will be influenced by social forces to accept and adopt internet banking. As a result, these two possible arrays of influence on internet banking will be depicted using hypotheses as follows;

H_6: An improvement in internet banking hedonic motivation has a positive significant effect on the adoption of internet banking.

H_7: An improvement in social influence over internet banking has a positive significant effect on the adoption of internet banking.

- **3.4.7 Effort and performance expectancies**

The UTAUT contends that the introduced technology must function easily and swiftly that enhance user benefits (Venkatesh & Davis, 2000). The same applies to internet banking and the more banks strive to enhance the performance of their internet banking services as well as make sure that they are easy to use, the more customers will use the related services. Studies have shown that improvements in both effort and performance expectations combinedly work towards improving the adoption of technology (Aboobucker & Bao, 2018; Alwan et al., 2016; Casaló, Flavián & Guinalíu, 2008). This is synonymous with findings made this indicates the extent to which the customer believes that using the system would increase the performance or output (Inder, Sood & Grima, 2022). With these apparent ideas in mind, the following hypotheses were formulated;

H_8: An improvement in internet banking's effort expectancy has a positive significant effect on the adoption of internet banking.

- **H_9:** An improvement in internet banking's performance expectancy has a positive significant effect on the adoption of internet banking.

- **4 Findings**

The findings of the study are derived from structural equation modelling estimations conducted using 283 questionnaire responses collected from bank customers of the top-three 2021 banks ranked best in terms of banking services in Erbil, Kurdistan. Factor analysis was conducted before the estimation process. The constructs were selected based on the guideline asserting that factor loadings of at least 0.70 indicate that the constructs are related (Bandalos & Finney, 2018; Shrestha, 2021) and the results are presented in Table 2.

The selected variable constructs were further tested to determine their validity using the Fornell and Larcker criterion test results. According to Table 2 result, discriminant validity exists following the depicted results showing that the diagonal correlation values exceed their respective underneath correlations coefficients values (Barrett, 2007). All the variables had Cronbach's alpha values exceeding the required cut-off of 0.70 as shown in Table 2. Hence, indicates a high internal consistency (Hooper, Coughlan & Mullen, 2008).

Table 2. Factor analysis results

No.	Variable	Label	Constructs	Loadings
1	Security and Reliability	SR1	The service provides instant response all the time.	0.73
		SR3	There is a fair and true description of services.	0.84
		SR6	Transactions are secured with advanced systems.	0.88
		SR7	There is a low chance of losing money to fraud.	0.76
2	Perceived Website Usability	PWU4	USERS can interact with the provided internet banking information.	0.87
		PWU5	Website details are easy to understand.	0.82
		PWU6	All the banking steps are provided.	0.86
		PWU7	All the banking steps are easy to understand.	0.80
		PWU8	The website is visually appealing.	0.81
3	Trust	TR1	Banking details are secure.	0.72
		TR2	Bank transactions are well secured from fraud.	0.87
		TR3	My banking details and private details are secured.	0.75
4	Experience, Habit and Attitude	EHA2	Experience in using internet banking suits my lifestyle.	0.82
		EHA4	I have been using internet banking for more than 1 year	0.73
		EHA6	I use internet banking for carrying out other financial transactions.	0.71
5	Facilitating Conditions	FC3	I have the necessary knowledge and awareness.	0.70
		FC8	Instructions are easy to read/understand.	0.76
6	Hedonic Motivation	HM2	Internet banking does not bring any difference in my life.	0.78
		HM5	It is expensive to use internet banking services.	0.82
		HM6	I use internet banking to conduct international transactions.	0.86
7	Social Influence	SI5	Friends suggest that I should use the service	0.71
8	Effort Expectancy	EE3	The system is flexible to interact with	0.88
		EE6	The system is easy to use.	0.90
9	Performance Expectancy	PE6	I save time to pay my bills when I use internet banking.	0.80
		PE7	Internet banking allows me to keep track of my transactions.	0.84
		PE8	Internet banking allows me to manage my money.	0.86

Table 3 results also confirmed the prevalence of composite reliability after noting that all the variables' Rho_A values were above 0.70 (Hooper, Coughlan & Mullen, 2008). Additionally, composite reliability was achieved as the composite reliability test values surpassed the 0.70 benchmarks (Barrett, 2007).

Table 3. Fornell and Larcker criterion test results

Note: ***SR****=Security and Reliability;* ***PWU****=Perceived Website Usability,* ***TR****=Trust;* ***EHA****=Experience, Habit and Attitude;* ***FC****=Facilitating Conditions;* ***HM****=Hedonic Motivation;* ***SI****=Social Influence;* ***EE****=Effort Expectancy, and* ***PE****=Performance Expectancy;* ***IB****= Internet Banking.*

The variables' convergent validity was tested using the AVE test results and Table 3 shows that all the nine variables have AVE values exceeding 0.50. This portrays that discriminant validity existed among the variables (Barrett, 2007).

	SR	PWU	TR	EHA	FC	HM	SI	EE	PE
SR	0.860								
PWU	0.604	0.820							
TR	0.580	0.622	0.788						
EHA	0.613	0.589	0.672	0.693					
FC	0.560	0.643	0.744	0.714	0.747				
HM	0.487	0.701	0.702	0.618	0.546	0.764			
SI	0.364	0.698	0.784	0.742	0.712	0.628	0.815		
EE	0.533	0.544	0.695	0.746	0.733	0.647	0.735	0.823	
PE	0.614	0.645	0.688	0.749	0.692	0.743	0.716	0.675	0.786

Table 4. Internal consistency and convergent validity tests.

	Cronbach's Alpha	rho_A	Composite Reliability	AVE
SR	0.815	0.770	0.870	0.533
PWU	0.836	0.820	0.884	0.610
TR	0.718	0.748	0.744	0.612
EHA	0.810	0.822	0.786	0.548
FC	0.814	0.801	0.814	0.573
HM	0.784	0.798	0.812	0.682
SI	0.788	0.800	0.786	0.600

EE	0.805	0.789	0.802	0.664
PE	0.844	0.865	0.890	0.580

Note: ***SR****=Security and Reliability;* ***PWU****=Perceived Website Usability,* ***TR****=Trust;* ***EHA****=Experience, Habit and Attitude;* ***FC****=Facilitating Conditions;* ***HM****=Hedonic Motivation;* ***SI****=Social Influence;* ***EE****=Effort Expectancy, and* ***PE****=Performance Expectancy;* ***IB****= Internet Banking.*

Table 4 shows that the NFI exceeded the required 0.95 cut-offs, while the chi-square value of 13.475 was significant at 1% thereby indicating a good fit (Barrett, 2007; Hooper, Coughlan & Mullen, 2008). Apart from the d_G and d_ULS values that are more than their related confidence intervals values, the SRMR value is less than 0.80 indicating a good fit (Barrett, 2007; Hooper, Coughlan & Mullen, 2008).

Table 5. Model fit summary

	NFI	Chi-Square	d_G	d_ULS	SRMR
Saturated Model	**0.970**	**13.475***	**0.238**	**1.688**	**0.074**
Estimated Model	**0.970**	**13.475***	**0.238**	**1.688**	**0.074**

After having successfully verified both the reliability, validity, robustness and fitness tests, the study proceeded with the estimation of the behavioural antecedent variables' path analysis. The goal was to determine how each of the behavioural antecedents interacts to influence the adoption of internet banking by bank customers. In that regard, Table 5 shows that there are significant positive effects emanating from security and reliability (coefficient=0.436; p-value=0.001), trust (coefficient=0.633; p-value=0.000), experience, habit and attitude (coefficient=0.192; p-value=0.000), facilitating conditions (coefficient=0.754; p-value=0.000), effort expectancy (coefficient=0.045; p-value=0.001), and performance expectancy (coefficient=0.703; p-value=0.000) to internet banking. Thus, hypotheses H_1, H_3, H_4, H_5, H_8, and H_9, were supported. On the contrary, hypotheses H_2 (coefficient=0.068; p-value=0.213), H_6 (coefficient=0.321; p-value=0.456), and H_7 (coefficient=0.519; p-value=0.087), were not validated.

Table 6. Path analysis and hypothesis results

Hypothesis	Path	Coefficient	p-value	Conclusion
H1	**SR → IB**	**0.436**	**0.001**	**Supported**
H2	**PWU → IB**	**0.068**	**0.213**	**Not Supported**
H3	**TR → IB**	**0.633**	**0.000**	**Supported**
H4	**EHA → IB**	**0.192**	**0.000**	**Supported**
H5	**FC → IB**	**0.754**	**0.000**	**Supported**
H6	**HM → IB**	**0.321**	**0.456**	**Not Supported**
H7	**SI → IB**	**0.519**	**0.087**	**Not Supported**
H8	**EE → IB**	**0.045**	**0.001**	**Supported**
H9	**PE → IB**	**0.703**	**0.000**	**Supported**

Note: ***SR****=Security and Reliability;* ***PWU****=Perceived Website Usability,* ***TR****=Trust;* ***EHA****=Experience, Habit and Attitude;* ***FC****=Facilitating Conditions;* ***HM****=Hedonic Motivation;* ***SI****=Social Influence;* ***EE****=Effort Expectancy, and* ***PE****=Performance Expectancy;* ***IB****= Internet Banking.*

- **5 Discussions**

With an emphasis on determining which behavioral antecedents hold a hugely significant influence on the adoption of internet banking, security and reliability had a significant positive effect on internet baking of 0.436. This mirrors a significant positive impact of 0.234 established in a related study by Inder, Sood and Grima (2022). This is attributed to an increase in the assurance that losses caused by security breaches and fraud have been prevented and hence, making it more secure and motivating for customers to use internet banking.

Moving on, the findings illustrated those improvements in bank customers' trust in both the banks and the internet banking services causes a significant increase in the adoption of internet banking by 0.633%. Unlike lack of trust which hinders the adoption of internet banking, the findings mirror Yousafzai and Yani-de-Soriano's (2012) findings that trust instils confidence and the right attitudes essential for increasing the adoption of internet banking. Besides, studies noted that trust enhancement initiatives like improving reliable transactions, offering multiple authentication channels and providing Internet security have been instrumental in improving the adoption of internet banking (Benamati et al., 2010; Yousafzai & Yani-de-Soriano, 2012).

In line with the acceptance of hypothesis 4 that experience, habits and attitudes significantly cause an increase in the adoption of internet banking by 0.192%. Studies corroborating such findings highlight changes in behaviour and habits toward technology (Aboobucker & Bao, 2018; Venkatesh et al. 2012; Yasin et al., 2020). Others also contend that high increases in adoption rates caused by experience, habits and attitudes are inevitable as people continue to learn more information on how to use technology (Inder, Sood & Grima, 2022). This mirrors propositions laid forth by the UTAUT as bank customers continue to emulate other individuals within that society's experience, habits and attitudes (Venkatesh & Davis, 2000).

H_5, H_8, and H_9 were accepted and hence denoted the significant positive effects of facilitating conditions, effort expectancy and performance expectancy of 0.754, 0.045 and 0.703, respectively. In comparison, insignificant positive changes in internet banking linked to were established facilitating conditions and effort expectancy (Alalwan et al., 2018) while Inder, Sood and Grima (2022) found improvements in performance expectancy as posing significant positive effects of 0.754 on the adoption of internet banking. Both findings mirror suggestions laid forward by the UTAUT denoting that bank customers will have the attitude and intention to use internet banking products and services once their (1) perceived benefits, (2) perceived ease of use and (3) attitudes towards internet banking are positively high

(Venkatesh & Davis, 2000; Venkatesh 2000). As a result, various social and economic factors are at play influencing the significance of facilitating conditions, effort expectancy and performance expectancy behavioural antecedents' influence on the adoption of internet banking in Kurdistan compared to other countries. On a similar note, perceived website usability, hedonic motivation and social influence posed insignificant but positive effects as suggested by the UTAUT regarding how perceived ease of use and social influence (Venkatesh 2000) play an instrumental role in determining people's attitude towards the introduced technology or information systems (Venkatesh & Davis, 2000). Hence, the findings are instrumental in shaping the development of internet banking products and services in an Islamic banking environment of Kurdistan that is uniquely structured from other countries because of various social and economic development, and religious influences.

6 Conclusions

In light of the aforementioned findings, the adoption of internet banking products and services in Kurdistan is mainly shaped around security and reliability, bank customers' trust, habits and attitudes, facilitating conditions, effort expectancy and performance expectancy behavioural antecedents. Practically, the implications demand that bank managers engage in major innovative drives aimed at improving internet banking features, usability, performance, reliability and security. Additionally, information and awareness programs should be designed to further educate customers on the benefits of internet banking so as to deal with the challenges posed by a lack of hedonic motivation and negative social influence against internet banking. Such is vital as it has been established that bank customers' adoption of internet banking in Kurdistan is positively influenced in an insignificant manner by hedonic motivation and social influence. Furthermore, the study's contributions direct policymakers and bankers into structuring internet banking products and services to specifically meet bank customers in Kurdistan's needs wants and preferences. On a theoretical level, the study advances propositions, implications and testing of the UTAUT, whose application in Kurdistan is academically sidelined.

The study is not void of limitations as its findings cannot be generalized to other countries and sectors as it is centred in the context of Kurdistan's banking sector. With data being collected from bank customers, the study overlooks the importance of bank managers' perceptions and approaches to internet banking. As such, future studies must supplement the use of questionnaire data collection tools with interview data collection methods. Additionally, future studies can broaden the study to incorporate two or more cities.

Conflict of interests: The Author declares no conflict of interest.

7 References

1. Aboobucker, I., & Bao, Y. (2018). What obstruct customer acceptance of internet banking? Security and privacy, risk, trust and website usability and the role of moderators. *The Journal of High Technology Management Research*, *29*(1), 109-123.
2. 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.
3. Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., & Algharabat, R. (2018). Examining factors influencing Jordanian customers' intentions and adoption of internet banking: Extending UTAUT2 with risk. *Journal of Retailing and Consumer Services*, *40*, 125-138.
4. AlQudah, A. A. (2014). Accepting Moodle by academic staff at the University of Jordan: Applying and extending TAM in technical support factors. *European Scientific Journal*, *10*(18), 183–200.
5. Alwan, Hussein Ahmad, and Abdelhalim Issa Al-Zubi. 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: 95.
6. Ameme, B. K. (2015). The impact of customer demographic variables on the adoption and use of internet banking in developing economies. *The Journal of Internet Banking and Commerce*, *20*(2).
7. Bandalos, D. L., & Finney, S. J. (2018). Factor analysis: Exploratory and confirmatory. In *The reviewer's guide to quantitative methods in the social sciences* (pp. 98-122). Routledge.
8. Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual differences*, *42*(5), 815-824.
9. Benamati, J. S., Serva, M. A., & Fuller, M. A. (2010). The productive tension of trust and distrust: the coexistence and relative role of trust and distrust in online banking. *Journal of Organizational Computing and Electronic Commerce*, *20*(4), 328-346.
10. Benamati, J. S., Serva, M. A., & Fuller, M. A. (2010). The productive tension of trust and distrust: the coexistence and relative role of trust and distrust in online banking. Journal of Organizational Computing and Electronic Commerce, 20(4), 328-346.
11. Casaló, L. V., Flavián, C., & Guinalíu, M. (2008). The role of satisfaction and website usability in developing customer loyalty and positive word-of-mouth in the e-banking services. *International journal of bank marketing*, 26: 399–417.
12. Chen, W. H. (2014). *Determinants of internet banking adoption by corporate customers: a study of behavioural intentions in Taiwanese*

businesses [Doctoral dissertation, University of Warwick]. Ethos Online Thesis.

13. Chiemeke, S. C., Evwiekpaefe, A. E., & Chete, F. O. (2006). The adoption of Internet banking in Nigeria: An empirical investigation. *Journal of Internet banking and Commerce*, *11*(3), 1-10.
14. Dianat, I., Adeli, P., Jafarabadi, M. A., & Karimi, M. A. (2019). User-centred web design, usability and user satisfaction: The case of online banking websites in Iran. *Applied ergonomics*, *81*, 102892.
15. Faiq, A. J. (2021). The Effect of the Financial Crisis on Investment Projects Case Study: Kurdistan Region of Iraq. *Kurdistan Journal of Applied Research*, 105-116.
16. Foon, Y. S., & Fah, B. C. Y. (2011). Internet banking adoption in Kuala Lumpur: an application of UTAUT model. *International Journal of Business and Management*, *6*(4), 161.
17. Hamakhan, Y. T. M. (2020). An empirical investigation of e-banking in the Kurdistan region of Iraq: The moderating effect of attitude. *Financial Internet Quarterly*, *16*(1), 45-66.
18. Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic journal of business research methods*, *6*(1), pp53-60.
19. Inder, S., Sood, K., & Grima, S. (2022). Antecedents of Behavioural Intention to Adopt Internet Banking Using Structural Equation Modelling. *Journal of Risk and Financial Management*, *15*(4), 157-175.
20. Jiménez, J. R. Z., & Díaz, I. A. (2019). Educational level and Internet banking. *Journal of Behavioral and Experimental Finance*, *22*, 31-40.
21. Jiménez, J. R. Z., & Díaz, I. A. (2019). Educational level and Internet banking. *Journal of Behavioral and Experimental Finance*, *22*, 31-40.
22. Kemp, S. (2021). Digital 2021: Iraq. (Data Reportal, 11 February 2021). Retrieved from https://datareportal.com/reports/digital-2021-iraq#:~:text=There%20were%2030.52%20million%20internet,at%2075.0%25%20in%20January%202021 on 2 August 2022.
23. MacLean, S., & Gray, K. (1998). Structural equation modelling in market research. *Journal of the Australian market research society*, *6*(1), 17-32.
24. Sharma, R., Singh, G., & Sharma, S. (2020). Modelling internet banking adoption in Fiji: A developing country perspective. *International Journal of Information Management*, *53*, 102116.
25. Shrestha, N. (2021). Factor analysis as a tool for survey analysis. American Journal of Applied Mathematics and Statistics, 9(1), 4-11.
26. Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, *11*(4), 342-365.
27. Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204.
28. Yadav, R., Chauhan, V., & Pathak, G. S. (2015). Intention to adopt internet banking in an emerging economy: a perspective of Indian youth. *International Journal of Bank Marketing*, *33*(4), 530-544.
29. Yasin, M., Liébana-Cabanillas, F., Porcu, L., & Kayed, R. N. (2020). The role of customer online brand experience in customers' intention to forward online company-generated content: The case of the Islamic online banking sector in Palestine. *Journal of Retailing and Consumer Services*, *52*, 101902.
30. Yousafzai, S., & Yani-de-Soriano, M. (2012). Understanding customer-specific factors underpinning internet banking adoption. *International Journal of Bank Marketing* 30: 60–81.
31. Yuen, Y. Y., Yeow, P. H., & Lim, N. (2015). Internet banking acceptance in the United States and Malaysia: a cross-cultural examination. *Marketing Intelligence & Planning*.