# A Study on The Relationship Between Customer's Profile and Practice of Internet Banking

Sani Salisu\*

School of Computer Sciences, Universiti Sains Malaysia, 11800 USM, Penang, Malaysia & Department of Information Technology Federal University Dutse, Jigawa, Dutse, Nigeria. sani.salisu@fud.edu.ng

Muhammad Salisu Ali Department of cyber security Federal University Dutse, 720211, Dutse, Jigawa, Nigeria Salisu14@yahoo.com Abubakar M. Miyim

Department of Information Technology

Federal University Dutse

Ditse,Jigawa, Nigeria

abubakr.miyim@fud.edu.ng

Hussain A. Younis

School of Computer Sciences,
Universiti Sains Malaysia, 11800 USM,
Penang, Malaysia & College of
Education for Women, University of
Basrah, 61004, Basrah, Iraq.
hussain.younis@uobasrah.edu.iq

Israa M. Hayder
Department of Computer Systems
Techniques,
Qurna Technique Institute, STU,
Basrah, Iraq.
israa.mh@stu.edu.iq

Nur Intan Raihana Ruhaiyem School of Computer Sciences, Universiti Sains 11800, Penang, Malaysia. intanraihana@usm.my

Abstract— Customers today utilized internet banking in big numbers. Banks have a strong need to understand their clients' behaviors and preferences. Attempting to discover links between certain profiles and consumer Internet banking usage. The self-administered survey technique was employed to gather data, with the convenience sampling approach being appropriate for the nature of the study. Only 80 questionnaires were distributed to the subjects to which about 75% were returned. Statistical analysis method is utilized to analyzed the data. Internet banking appear acceptable to the younger customers of commercial banks. This study has provided the relationship between the categories of customers of the bank and their purpose of using the internet banking services. The findings will serve as a guide for future research on finding relationship between customers and internet banking services.

Keywords—Model, Information Technology, Internet Banking, Correlation, customers.

#### I. INTRODUCTION

The Information and communication technology development shifted the Paradigm of the service industries specifically banking industries, all over the glove. Today, large percentage of banking process has been carried out electronically. Internet banking is created because of the incorporation of internet services into banking procedures. It is the most-profit-making e-commerce application adopted by banking industries [1] Banking industries adopted internet banking application in order to minimize cost and improve services [2]. furthermore, the internet banking is said to be beneficial not to only to the stakeholders but including the customers [3], [4] since customers can have access to the banking services from wherever they are, using the internet fertilities, hence, reducing the cost and time [5]. Other benefits of internet banking to customers are paying the bills (utility and others), money transfer, web based relationship rather than personal relationship and privacy among others. [4], [6] believed that internet banking help in building a better relationship between customers and the bank's staff. Despite all the benefits of internet banking to the customer, banking industries are facing a significant challenge in making lots of their customers embrace the use of the internet banking services. Because of the customer's behavior in accepting the internet banking services, commercial banks are forced to make serious rivalry and competition among themselves in order to retain and change their customer's behavior to embrace the services. Commercial banks are requiring to enhance their offerings to achieve a competitive edge by implementing various promotional services, soft loans, excellent internet service, and many more. [7], [8] mentioned that good internet banking services will improve customer retention, loyalty and gaining competitive advantage.

An efficient internet banking services promote customer's loyalty and satisfaction hence, yielding a fruitful relationship between customer and the commercial bank [2],[9],[10].Today, customers generally prefer online banking due to the effective internet banking services that are provided by their bank management. Understanding the needs and priorities of customers is extremely important in order to achieve competitive advantage. The purpose of this study is to determine the connections between customer's behavior and internet banking services.

## II. LITERATURE REVIEW

One of the services provided by commercial banks is internet banking in which all transaction is conducted electronically through the internet. For many decades, internet banking has been studied in two different context of technology and services [4]. In technology context, internet banking is considered online plat-form that allows customers to access banking services through computer network[11] while is service context, internet banking is seen online banking channel that allows customer to access the banking services through the bank web site of software application[12].In [13], the aim was to verify, While stressing the variations across the digital service channels, this paragraph discusses the impact of interactivity and social

presence on interaction with bank customers, how much this relationship influences the experience with brand and their effect on satisfaction and loyalty (websites and apps). One study carried out a survey and analyzed the data using PLS-MGA group method and the results obtained shows a positive effect of interactivity and social presence. But in[14], the author investigate the intention of users towards the use of internet banking services by conducting a survey and analysed the data using SME model and the result shows that commitment theory, SDT and expectation-confirmation model had a significant impact on customers continuous using the internet banking services. In [15], the purpose of the study is to examine the gap that exists in the use internet banking services by customers and the research finding reveals that education level and digital skills can affect the use of internet banking among the users.

Another survey was conducted in [16] and it is aimed at investigating the issue of cyber security crime in the Nigerian internet banking industries and the result shows a significant change of the Nigerian cybercrime industry from low-tech cyber-enabled crimes to high-tech complex branches. Also in [17], the study assess the security of internet banking services by deploying a framework based on deep analysis of big data and the result revealed many deficiencies in the internet banking services.[18] investigate the factors influencing the adoption of internet banking among bank's customers in Yemen using UTAUT and the outcomes of the research shows that service quality, trust and awareness are the major factors that influenced the customer's intention to adopt the internet banking in Yemen. Moreover, [19], study the impact dimension of perceived risk on customer's intention to adopt the internet-based banking using the Perceived risk theory (PRT) and the result uncovered that security and privacy risk increased.

The implementation of internet banking services among the banking industry has become a global concern. The practice has been implemented in many advanced countries. Many developing countries which include Jordan [20], Yemen [21], [22], India [23], Bangladesh [24], Iran [25] and Malaysia [26], [27], adopted the internet banking services at early stage. Adoption of internet banking has achieved a significant impact in banking communities in terms of fund management [28], banking security [29] - [31], service quality [32] and customer satisfaction [33].

## III. METHODOLOGY

## A. Procedure of Data collection

The quantitative research approach is used in this study because it is the most suitable for its purpose, which is to determine the associations between specific characteristics and consumers' use of Internet banking. As a result, the convenience sampling approach, which is appropriate for the study's purpose, was utilised to gather the data using the self-administered survey method.

The questionnaire designed carried out five (5) Utilizing a convenience sample strategy, a new question was self-administered to get the pertinent main data needed for subsequent research.

# B. Sampling Procedure

Because of the nature of sampling technique, only 80 questionnaires were distributed to the subjects in which about 75% where returned. Out of the questionnaires returned, another 5 questionnaires were rejected due to incomplete data. Five blank questionnaires were discovered and discarded as well. Therefore, total of 50 questionnaires receives and utilized as the total sample size of the survey. The questionnaires contain the demographic profile of the respondents and other vital questions relating to internet banking services.

## IV. RESULTS AND DISCUSSION

In Table I shows the age distribution of the respondents who participated in the survey. From the table, is it obvious that customers between the ages of 21 and 25 (21-25) are the dominant group in the survey. Also, respondents age group of 29 to 40 are using internet banking more than those between 50 and 60 years old. Respondents at the ages of 31.8 years (mean age) use internet banking more. The model is 25 years old. This indicates that most bank clients are under the age of 25. The medium age is 29 years meaning that majority of the bank customers under the age of 25 years are using internet of banking.

# Q1. How old is the participant?

TABLE I. DISTRIBUTION OF AGES OF THE PARTICIPANTS.

C	X	F	FX	D(X-m)	D^2	FxD^2
21-25	23	15	345	-9.45	89.30	1339.54
26-30	28	13	364	-4.45	19.80	257.40
31-35	33	05	165	0.55	0.30	1.5000
36-40	38	09	342	5.55	30.80	277.20
41-45	43	04	172	10.55	111.30	445.20
46-50	48	03	144	15.55	241.80	725.4
51-55	53	00	000	20.55	422.30	000.00
56-60	58	01	058	25.55	652.80	652.80
		F=50	FX=1590			3699.04

X: Mid-value, F: Frequency: Produce Fand X, and C: Class interval.

Fig1. is displaying the confidence intervals for the mean, median, and standard deviation of the participant's ages.

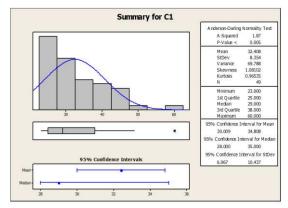


Fig. 1. A connection between Profile and online banking procedures

From the Table II, 27 of the participants were male while 23 were female. The result in percentages show that 54% were male and 46% were female hence male participants used internet banking than female participants.

## Q2. What is your Gender?

TABLE II. DISTRIBUTION OF GENDER OF THE PARTICIPANTS.

Gender	Number in the sample	Percentage out of total
Male	27	54%
Female	23	46%

From Table III, the results show that most of the customers are using the internet banking more than ten times in a week.

Q3. How often do you make transactions through the internet banking per week?

TABLE III. WEEKLY TRANSACTION DONE BY CUSTOMERS

s/no ·	Category of transaction	Number of participants	Percentag es
1	Below 5	15	30%
2	Around 5-10	11	22%
3	More than 10	24	48%

The result from Table IV shows that users who used internet banking for good purpose are more than those that uses the internet banking for just balance checking, since credit card payment and money transfer are very important service of internet banking so when summing them together 20%+38%=58% which is more than 42%.

## Q4. What is the Purpose of using internet banking?

TABLE IV. PURPOSE OF USING THE INTERNET BANKING.

s/no.	Purpose of using the iBanking	Participants that used that purpose	percentage
1	Money transfer	10	20%
2	Credit card payment	19	38%
3	Balance checking	21	42%

Table V answered the question "which working category does the customer belong? From the result obtained, it may be concluded that government workers are not using internet banking as the rest of working categories such as selfemployed and those that work in private organization or companies.

## Q5. Which working category do you belong?

TABLE V. WORKING CATEGORY OF THE PARTICIPANTS

s/no.	Working category	Participants working in the category	Percentage	
1	Government service	11	22%	
2	Private org./company	16	32%	
3	Self employed	23	46%	

Table VI SHOWS THE CORRELATION ANALYSIS OF TWO QUESTION (Q4 & Q5).

Purpose of using iBanking	10	19	21
Working category	11	16	23

From the table, the correlation coefficient denoted by r is positive (r=0.9013) it is calculated from the parameters displayed in VII. The coefficient correlation r is calculated using equation I .

Table VII. CORRELATION VALUES OF Q4 &Q5

X	Y	XY	$X^2$	$Y^2$
10	11	110	100	121
19	16	304	361	256
21	23	483	441	529
$\sum x = 50$	$\sum y = 50$	$\sum x = 897$	$\sum x^2 = 902$	$\sum y^2 = 906$

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$
(I)

The interpretation would be that. government employees use online banking for money transfers, private organizations or companies for credit card payments, and self-employed individuals for monitoring balances is demonstrating the relationship between the two queries as shown in Fig2.

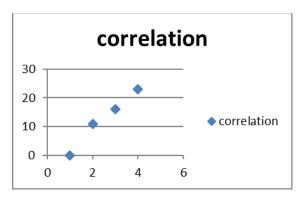


Fig. 2. Correlation Analysis of Q4 and Q5.

In oreder to interprete the findings of this research a simple influence diagram is formed to illustrate the connection or relationship between both influencing and affected varibles as shown in Fig.3.

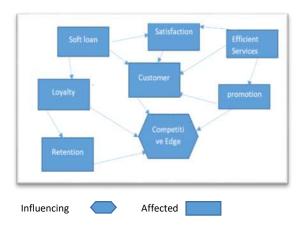


Fig 3. Influence diagram of the iBanking system

#### V. CONCLUSION

It seems that Internet banking services are acceptable to the younger customers of commercial banks. This acceptance is dependent on the efficiency of the Internet banking services and the promotional services offers to the customers by the bank. This study has provided the relationship between the categories of customers of the bank and their purpose of using internet banking services and will guide future research on Internet banking services.

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#### References

- M. Wang, S. Cho, T. Denton, "The impact of personalization and compatibility with past experience on e-banking usage", Int. J. Bank Mark.,pp. 45–55, 2017.
- [2] S. A. Raza, A. Umer, M. A. Qureshi, A. S. Dahri, "Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model", TQM J., 32 1443–1466, 2020.
- [3] F. Shahzad, G. Y. Xiu, M. Shahbaz, "Organizational culture and innovation performance in Pakistan's software industry", Technol. Soc.,pp. 66–73, 2017.
- [4] S. Rahi M. Abd. Ghani, "Does gamified elements influence on user's intention to adopt and intention to recommend internet banking?", Int. J. Inf. Learn. Technol., pp. 2–20, 2019,
- [5] H. S. Yoon L. M. Barker Steege, "Development of a quantitative model of the impact of customers' personality and perceptions on Internet banking use", Comput. Human Behav., pp.1133–1141, 2013.
- [6] R. DeYoung, W. W. Lang, D. L. Nolle, "How the Internet affects output and performance at community banks", J. Bank. Financ., pp.1033–1060, 2007,
- [7] C. Makanyeza L. Chikazhe, "Mediators of the relationship between service quality and customer loyalty: Evidence from the banking sector in Zimbabwe", Int. J. Bank Mark., 35, pp. 540–556, 2017
- [8] J. Kandampully, T. (Christina) Zhang, A. Bilgihan, "Customer loyalty: A review and future directions with a special focus on the hospitality industry", Int. J. Contemp. Hosp. Manag., 379–414, 2015.

- [9] A. Shankar C. Jebarajakirthy, "The influence of e-banking service quality on customer loyalty: A moderated mediation approach", Int. J. Bank Mark., 1119–1142, 2019,
- [10] I. Sasono, "The Impact of E-Service Quality and Satisfaction on Customer Loyalty: Empirical Evidence from Internet Banking Users in Indonesia", J. Asian Financ. Econ. Bus., vol 8.no4, pp. 465–473, 2021.
- [11] S. Rahi, N. M. Yasin, F. Mi Alnaser, "Journal of Internet Banking and Commerce Special Issue: Mobile banking: A service provider perspective Edited By: Mihail N. Dudin Measuring The Role Of Website Design, Assurance, Customer Service And Brand Image Towards Customer Loyalty And Intention To A", J. Internet Bank. Comme. vol 22, S8, pp.1–18, 2017.
- [12] M. M. Asad, N. S. Mohajerani, M. Nourseresh, "Prioritizing Factors Affecting Customer Satisfaction in the Internet Banking System Based on Cause and Effect Relationships", Procedia Econ. Financ, pp. 210– 219, 2016.
- [13] D. M. Garzaro, L. F. Varotto, S. de C. Pedro, "Internet and mobile banking: the role of engagement and experience on satisfaction and loyalty", Int. J. Bank Mark., , . 1–23, 2021.
- [14] S. Rahi, M. M. Othman Mansour, M. Alharafsheh, M. Alghizzawi, "The post-adoption behavior of internet banking users through the eyes of self-determination theory and expectation confirmation model", J. Enterp. Inf. Manag., pp.1874–1892, 2021,
- [15] T. Pérez-Amaral, A. Valarezo, R. López, T. Garín-Muñoz, "Digital divides across consumers of internet services in Spain using panel data 2007–2019. Narrowing or not?", Telecomm. Policy, pp. 1–17, 2021.
- [16] V. Wang, H. Nnaji, J. Jung, "Internet banking in Nigeria: Cyber security breaches, practices and capability", Int. J. Law, Crime Justice, 100415, 2020.
- [17] S. Khattak, S. Jan, I. Ahmad, Z. Wadud, F. Q. Khan, "An effective security assessment approach for Internet banking services via deep analysis of multimedia data", Multimed. Syst., pp. 733–751, 2021.
- [18] N. H. Al-Fahim, R. Abdulgafor, E. H. Qaid, "Determinants of Banks' Costumer's Intention to adopt Internet Banking Services in Yemen: Using the Unified Theory of Acceptance and Use of Technology (UTAUT)", 2021 Int. Congr. Adv. Technol. Eng. ICOTEN 2021, 2021.
- [19] H. R. Khedmatgozar, "The impact of perceived risks on internet banking adoption in Iran: a longitudinal survey", Electron. Commer. Res., 21, 1, 147–167, 2021.
- [20] Mustafa S. Al-Shaikh, Ahamd Al Sadi, Zakaria Azzam, Ayed Moh'd Al Muala and Amer Salim Alsaraireh, "The Effect of Electronic Marketing Tools on Customer Satisfaction with Electronic Services in Jordanian Islamic banks (A case study of the Islamic International Arab Bank in Amman City – Jordan)," 2021 22nd International Arab Conf. (ACIT), pp.1-12,2021, DOI: 10.1109/ACIT53391.2021.9677421.
- [21] A. Zolait, A. Sulaimanii, and S. F. S. Alwi, "Internet Banking Adoption in Yemen: an Evaluation of Banks' Websites," Conf. Inf. Manag. Internet Res., vol. 6, no. November 2015, p. 7, 2007.
- [22] B. Excellence, "Prospective and challenges of internet banking in Yemen: an analysis of bank websites Ali Hussein Saleh Zolait\*, Ainin Sulaiman and Sharifah Faridah Syed Alwi," vol. 1, no. 3, p. 2008, 2008.
- [23] R. Khande and Y. Patil, "Online banking in India: Attacks and preventive measures to minimize risk," 2014 Int. Conf. Inf. Commun. Embed. Syst. ICICES 2014, no. 978, 2015, doi: 10.1109/ICICES.2014.7033940.
- [24] S. F. Shetu, I. Jahan, M. M. Islam, R. Ara Hossain, N. N. Moon, and F. Narin Nur, "Predicting Satisfaction of Online Banking System in Bangladesh by Machine Learning," ICAICST 2021 2021 Int. Conf. Artif. Intell. Comput. Sci. Technol., pp. 223–228, 2021, doi: 10.1109/ICAICST53116.2021.9497796.
- [25] A. Talebpour, S. Bairamzadeh, and S. S. Vajdi, "Extending the technology acceptance model for internet banking: A case study of Iran," ITNG 2009 - 6th Int. Conf. Inf. Technol. New Gener., pp. 1637– 1638, 2009, doi: 10.1109/ITNG.2009.153.
- [26] A. Sanayei and A. Noroozi, "Security of internet banking services and its linkage with users' trust: A case study of parsian bank of iran and CIMB bank of Malaysia," Proc. - 2009 Int. Conf. Inf. Manag. Eng. ICIME 2009, pp. 3–7, 2009, doi: 10.1109/ICIME.2009.153.
- [27] I. M. Hayder, Ghazwan AL-Ali and H. A. Younis," Predicting reaction based on customer's transaction using machine learning approaches," International Journal of Electrical and Computer Engineering, vol. 13, no. 1, pp. 1086–1096, 2023.

- [28] A.Ajam and K. Nor, "Adoption of Internet Banking by Yemeni Consumers: An Empirical Investigation," vol. 7, no. 2, pp. 182–189, 2013.
- [29] A. A. B. Ng and N. L. Abdullah, "Security challenges in designing an integrated web application for multiple online banking," Proc. 2010 Int. Symp. Inf. Technol. - Vis. Informatics, ITSim'10, vol. 1, 2010, doi: 10.1109/ITSIM.2010.5561291.
- [30] N. Yildirim and A. Varol, "A research on security vulnerabilities in online and mobile banking systems," 7th Int. Symp. Digit. Forensics Secur. ISDFS 2019, pp. 1–5, 2019, doi: 10.1109/ISDFS.2019.8757495.
- [31] P. Subsorn and S. Limwiriyakul, "A case study of internet banking security of mainland Chinese banks: A customer perspective," Proc. -2012 4th Int. Conf. Comput. Intell. Commun. Syst. Networks, CICSyN 2012, pp. 189–195, 2012, doi: 10.1109/CICSyN.2012.43.
- [32] M. Sajić, D. Bundalo, Z. Bundalo, and D. Pašalić, "Digital technologies in transformation of classical retail bank into digital bank," 2017 25th

- Telecommun. Forum, TELFOR 2017 Proc., vol. 2017-Janua, pp. 1–4, 2018, doi: 10.1109/TELFOR.2017.8249404.
- [33] R. Priya, V. Tamilselvi, and G. P. Rameshkumar, "A novel algorithm for secure Internet Banking with finger print recognition," Int. Conf. Embed. Syst. ICES 2014, no. Ices, pp. 104–109, 2014, doi: 10.1109/EmbeddedSys.2014.6953099.
- [34] S. Alimolaei, "An intelligent system for user behavior detection in Internet Banking," 4th Iran. Jt. Congr. Fuzzy Intell. Syst. CFIS 2015, 2016, doi: 10.1109/CFIS.2015.7391642.

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