

Quality of E-banking Services Impact on Customer Satisfaction: study on the banking sector in Libya

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ABSTRACT

Due to the explosive growth of the Internet and the globalization of the market, organizations are trying to draw customers on the violent competitive electronic market. Offering highly qualified electronic services is the only way to achieve a competitive advantage on the market. Therefore, the aim of this study was to examine how customer satisfaction is influenced by the quality of e-banking services. A total of 350 surveys were distributed among bank customers in the Libyan banking sector, 280 usable questionnaires were collected and analyzed, and the modeling of the structural equation with SPSS and AMOS (23) were used to analyze the collected data. The results show that all dimensions of the quality of e-banking services namely ease of use, efficiency, reliability, security and privacy, and responsiveness and communication, all have a significant connection with the customer's satisfaction, with security and privacy that have lower effects and reliability is the dimension with the strongest influence. This research provides important recommendations that aim to support assisting the bank in improving the quality of its electronic banking services.

جودة الخدمات المصرفية الإلكترونية وأثرها على رضا العملاء: دراسة على القطاع المصرفي في ليبيا

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الكلمات المفتاحية

جودة الخدمات
الخدمات المصرفية الإلكترونية
القطاع المصرفي الليبي
رضا العملاء

المخلص

في ظل التطور الهائل للإنترنت وعولمة السوق، تحاول المؤسسات جذب العملاء إلى السوق الإلكترونية التنافسية. حيث ان تقديم خدمات إلكترونية عالية الجودة هو السبيل الوحيد لتحقيق ميزة تنافسية في السوق. لذلك، هدفت هذه الدراسة إلى معرفة كيفية تأثير رضا العملاء بجودة الخدمات المصرفية الإلكترونية. تم توزيع 350 استبياناً بين عملاء في القطاع المصرفي الليبي، وتم جمع وتحليل 280 استبياناً صالحاً باستخدام حزمة التحليل الإحصائي SPSS و AMOS (23). تُظهر النتائج أن جميع أبعاد جودة الخدمات المصرفية الإلكترونية وهي (سهولة الاستخدام، والكفاءة، والموثوقية، والأمان والخصوصية، والاستجابة والتواصل)، جميعها لها علاقة كبيرة برضا العملاء، حيث كان بعد الأمان والخصوصية أقل تأثيراً والموثوقية هي البعد ذو التأثير الأقوى. قدم هذا البحث توصيات مهمة تهدف إلى دعم ومساعدة المصارف في تحسين جودة خدماتها المصرفية الإلكترونية.

Introduction

Information technology has expanded to all commercial sectors, especially in banking, due to the market globalization and the explosive growth of the Internet, encouraging businesses to draw in clients within a competitive online marketplace. Today, almost all banks have integrated ICT to enhance the quality of their banking services. At this time, every single banking operation is carried out online [1]. Online -based services include ATMs and electronic money transfers, online bill payment and statement processing [2], consumers can now view their account statements online without physically visiting the bank, they have the ability to see their account statement from the comfort of their own home, they can perform different tasks like deciding the amount to deposit, withdraw, pay bills, clients do not need to go anywhere to finish those tasks. Electronic banking happens

when a customer uses electronic means to communicate with a bank without any human interaction [3, 4], offering highly qualified electronic services is the only way to obtain a competitive edge in this battle and take the lead in the market.

In general, the most crucial element for gaining a competitive edge is service quality [5], to accomplish its objectives and guarantee its stability and longevity for as long as possible, service organizations strive to ensure customer satisfaction in order to not only survive, but also to compete successfully in the market and excel in both their physical and intangible offerings, careful selection of trained workers who can effectively handle customers' needs is crucial. To meet its objectives and ensure its clients are happy, high standards for electronic banking services must be implemented by Libyan banks.

The advancement in ICT transformed the world into a global

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village and completely changed the banking sector. The banking industry is extremely competitive and complex in the twenty-first century, and ICT is crucial to banking transactions [6]. In the past, Finland's first Automated Teller Machine (ATM) marked the start of a new banking option that made the country the leader in E-Banking, surpassing both developed and developing countries [7]. Additionally, it has become a crucial factor for improving the overall quality of the services, especially in the realm of E-Banking services [8], E-banking, or the delivery of financial services via electronic platforms, has become increasingly popular in recent years due to technological advances and bank competition among consumers [9].

[10] defines e-banking services as the various electronic channels on the Internet, telephone, TV, mobile device and computer used to conduct banking transactions, as technology develops and advances, bank customers' expectations of the service increase, customers today expect to be able to carry out their banking transactions from anywhere, at any time and without restrictions from the bank's business hours, they also desire to make all their transactions swiftly and affordably. including purchasing items, paying bills, and managing stocks . As a result, financial services should possess independence, flexibility, freedom, and adaptability in order to meet these needs [11].

In Libya, e-marketing and e-banking are new banking methods that Libyan banks need to embrace in order to compete with international banks, few Libyan banks prioritize service quality, with only a small number offering good service, this can be illustrated by the extended transition periods and prolonged lines at each bank [12]. Libya bank sector requires high quality of service to meet customer expectations and perceptions, E-Banking in the country is predominantly restricted to the mobile devices and Internet, one reason for this is the slow progress of the country's IT infrastructure, taking that into consideration, we define the idea as the ability to conduct financial and banking transactions online via mobile applications or the Internet.

E-banking enables customers to view account information, send funds, and access a wide range of banking services and products. It is essential to the economy because it makes it easier for buyers and sellers to conduct financial transactions by exchanging goods and services virtually.

In today's extremely competitive and globalized market, there is a strong desire for customer satisfaction [13]. In the realm of marketing studies, customer satisfaction is currently regarded as a crucial concept [14], in order to illuminate the concept, a number of definitions of customer satisfaction were proposed, [15] defines satisfaction as an emotional evaluation judgment after consuming a service or product . [16] claimed that feedback on an assessment of the purchase or product quality and expectations from the previous phase of the purchase can also be referred to as satisfaction.

Effective customer service is the key element that ultimately determines the success or failure of a company, because of swift technological advancements and competitive market conditions, the significance of service quality is growing, it is therefore crucial to understand a problem of service quality to cover customer needs [13]. Several other studies show a connection between satisfaction of customer and e-banking services, [17] showed in their study that the use of e-banking services increases customer satisfaction in the banking sector, similarly, a study in the banking industry by [18] showed a strong correlation between customer satisfaction levels and

service quality, finally, [19] expressed that customer satisfaction level is greatly influenced by the degree of e-banking service quality.

Various aspects related to security and privacy, such as preserving operational confidentiality, avoiding the sharing of personal data, and guaranteeing high security levels for customer data have been identified and examined by researchers. [20-23], in order to make customers feel safe and secure during their transactions, bank employees must be responsive, which shows that they are ready to support them and to answer their questions, customers generally expect their request to be immediate as they don't want to wait [24], several studies have found a connection between customer satisfaction and E-Banking services. According to the literature we reviewed, these factors can be categorized as privacy, security, reliability, efficiency, and responsiveness and communication. This study aims to investigate how the electronic service quality provided by the Libyan bank industry impacts customer satisfaction.

Research Problem

E-banking offers a competitive advantage over traditional banking by reducing costs and meeting customer needs effectively [25], [26] found that ease of use, reliability, accessibility, responsiveness, efficiency , and cycle time greatly affect satisfaction of customer in E-banking service quality, while security and privacy do not, in 2016, [27] found that the effect of reliability on customer satisfaction with E-banking services was both positive and not significant, [13] stated that the impact of assurance on customer satisfaction with online banking services is negative and minimal. In addition, [28, 29] suggested that future studies should involve a larger sample size in order to obtain more definitive findings for generalizing the study results. Thus, as a result of inconclusive findings, a lack of methodology, and suggestions for further research by previous scholars, the main objective of this study is to examine how the quality of e-banking services in Libyan banks affects customer satisfaction.

Research hypotheses

The current study proposed four hypotheses which are:

(H1): Customer satisfaction is positively influenced by the efficiency of e-banking services.

(H2): Customer satisfaction is positively influenced by the reliability of e-banking services.

(H3): Customer satisfaction is positively influenced by the security and privacy of e-banking services

(H4): Customer satisfaction is positively influenced by the responsiveness and communication of e-banking services.

Research methodology

This research was classified as a quantitative method, a questionnaire of pre -validated scales was developed by extensive literature research, and the distributed questionnaire used a five-point Likert scale. In order to ensure the accuracy and capture the intended meanings of the elements, the survey was first translated into the Arabic and then back into English. The statistical software programs SPSS and AMOS 23 were used to analyse the data collected for this study. A total of 280 samples of usable surveys were collected and examined in the end.

Cronbach Alpha was used to measure reliability. Cronbach Alpha values above 0.7 are considered acceptable [30], according to the results, customer satisfaction with the E-Banking service was the dependent variable, and four highly reliable items were used to measure them (Cronbach's alpha = 0.91), while efficiency and ease measured with four elements

(Cronbach's alpha = 0.79), safety and privacy measured with four elements (Cronbach's alpha = 0.89), reliability measured with three elements (Cronbach's alpha = 0.85, and responsiveness and communication measured with three elements (Cronbach's alpha = 0.81). Since all Cronbach's alpha values are over 0.79, they are considered excellent.

Results

Descriptive Statistics

The sample was normally distributed, were out of a total of 280 valid questionnaires were collected from Nuran Bank' costumers in Libya, a total of 224, which represented 80 %, were male, while the rest of 20 % (56) were female, the majority of them belonged to the 25–30 age range, which is 45 % (126), and had private sector employment, which is 71 % (198). Furthermore, the majority of those surveyed had a college degree, 48.6% (136) of them have a bachelor's degree, while 37.2% (104) have a professional certification or graduate degree, the majority of respondents thought online banking was useful and used electronic banking. Furthermore, most of them believed that using electronic banking saved time and money. Otherwise, they believed that electronic banking can be trusted. Table 1 below displays these statistics.

Table 1: Descriptive Statistics.

		%
Gender	Males	80 %
	Female	20
Age	Less than 25	15
	25-30	45
	30-35	23
	More than 35	17
Education	Graduate degree/certification	37.2
	BA degree	48.6
	Post Graduate and above	14.2
Usage frequency.	Never	4.6
	once every month.	17.3
	twice a month	28.9
	At least three times a month.	49.2

The Measurement Model

AMOS (23) was used to analyze the data, Convergent and discriminant validity are employed as construct validity measures [31], the measurement model is used to evaluate the validity and reliability of the connections between the indicators and the latent constructs., the reliability and validity results from the robustness tests are displayed in Table 2.

Composition reliability (CR), evaluates the internal consistency of the constructs used in the measurement instrument in order to measure the reliability of the constructs in the measurement model [32]. According to the data in Table 2, all CR results exceeded the proposed 0.7 [32], whereby the values were between 0.81 and 0.92. This implies a strong degree of consistency or reliability in the measurements of the scale greater than .6, and all indicators loading should be significant and higher than .5. The average variances extracted by each construct should be greater than the variance resulting from the measurement error for that construct (i.e. AVE should be higher. 5).

The convergent validity is evaluated by using factor loading and average variance Extracted (AVE) [32]. To demonstrate strong convergent validity, all factor loadings must be

Table 2: Reliability and Validity

	CR	AVE	RC	EU	R	SP	S
RC	0.814	0.651	0.802				
EU	0.917	0.670	0.658	0.850			
R	0.874	0.661	0.626	0.785	0.831		
SP	0.903	0.698	0.545	0.508	0.653	0.642	
S	0.921	0.791	0.769	0.748	0.792	0.647	0.931

Note. AVE = average variance extracted. CR= Composite Reliability, RC= esponsiveness & communication, EU= Efficiency & ease of use, R= Reliability, SP= Safety & privacy, S= Satisfaction.

significant and greater than 0.5 [35]. Furthermore, it is acceptable if AVE exceeds 0.5 [32]. AVE was calculated using the formula provided by Fornell and Larcker [36].

$$AVE = \frac{\sum_{i=1}^n \lambda_i^2}{n}$$

Where AVE =Average variance extract, λ = the standardized factor loading, n = the number of items.

Standardized factor loadings in the measurement model (Fig 1) were used to evaluate convergent validity, demonstrating how well a construct's indicators align with it and converge on it. as the model illustrates, all factor loadings, which range from 0.68 to 0.92 and are above the recommended cutoff of 0.5 [37] are in the acceptable range, demonstrating sufficient convergent validity.

Discriminant validity is the degree to which one construct is actually different from another. [38]. As result, measures of unrelated constructs should therefore not be correlated with those measuring discriminant validity [39]. According to the criteria of Fornell and Larcker [36], discriminant validity can be assessed by comparing the square root of AVE to the correlations between the constructs.

Discriminant validity checks that all average variance extracted (AVE) values were higher than the suggested cutoff of 0.5 [37], in order to determine whether the constructs being studied are different from one another. The AVE values in this study fell between 0.65 and 0.79, indicating that our constructs do not have any problems with discriminant validity. Standard model fit indices were used to evaluate the measurement model for good fit, and the results are displayed in Table 3.

Table 3: Measurement model fit

CMIN/df	1.960 < 3
CFI	0.960
TLI	0.961
(NFI)	0.930
MSEA.	0.06

All the factor loadings were all significant at the $p < 0.001$ level and higher than the 0.50 threshold level, indicating convergent validity show the discriminant validity of the construct was supported by all R2 values, that were either greater than or close 0.50. Figure 1 displays the standardized factor loadings and the measurement model.

The Structural Model

This model consisted of four external factors (reliability, efficiency and ease, responsiveness and communication, and safety and privacy), as well as an endogenous variable (Satisfaction with the quality of service). As shown in Table 4, it was found that this model has an adequate fit to the data based on the following standard model fit indicators:

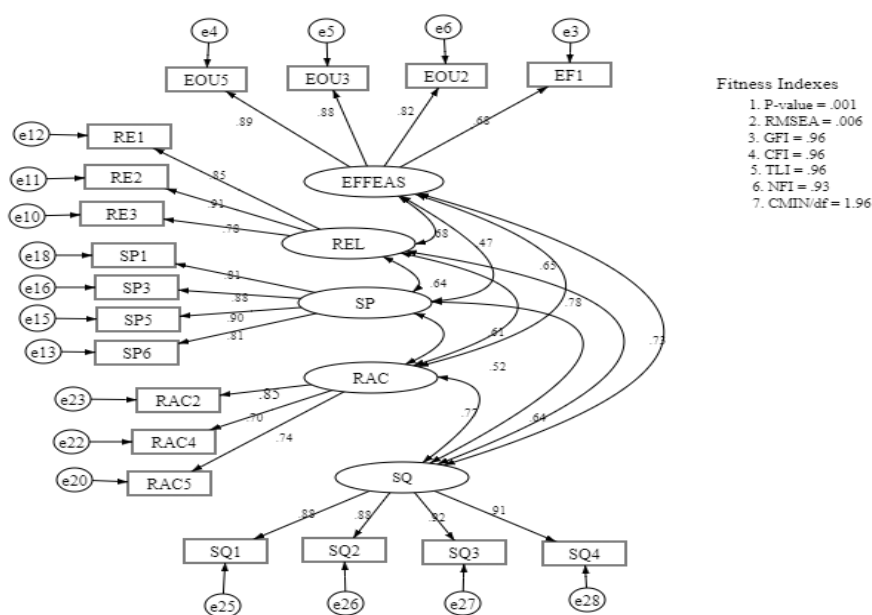


Fig. 1: The measurement model

EF = efficiency; RE = reliability; EOU = ease of use; SP = security and privacy; SQ = satisfaction with quality; RC = responsiveness and communication.

Table 4: Structural Model fit

CMIN/df	1.92 < 3
CFI	0.91
GFI	0.84
AGFI	0.81
NFI	0.90
TLI	0.92
SRMR	0.03 < 0.05
RMSEA	0.05 < 0.08

In addition, the R-square values indicate the predictive ability of the constructs of the model, R-squared scores for efficiency and ease of use were 0.62 and reliability was 0.78, responsiveness and communication scored 0.69, safety and privacy scored 0.49.

This confirms the predictive ability of the model and all four hypotheses that relate to the quality of the service quality in this research. Fig. 2 shows the structural model.

Results from the SEM indicate that customers' perception of service quality is mainly influenced by the reliability of E-Banking, with a standardized beta of 0.85. This is followed by efficiency and ease of use $STD = 0.83$, and responsiveness and communication $STD = 0.80$. Safety and privacy $STD = 0.64$ has less of an effect on E-Banking's service quality compared to convenience $STD = 0.80$ and reliability $STD = 0.89$.

Next, it was important to investigate the connection between customer satisfaction with online banking and the general aspects of service quality, the primary hypothesis of the study suggested a strong and positive correlation between consumers'

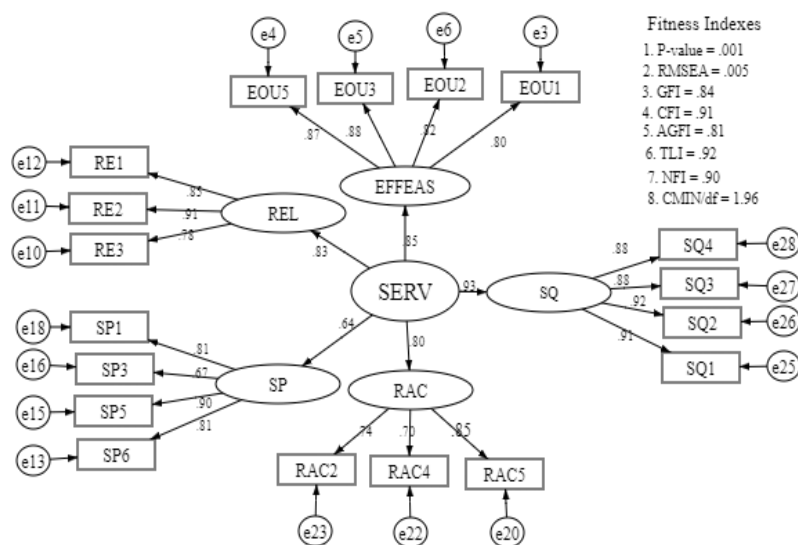


Fig. 2: The structural model

satisfaction with online banking and the quality of its services, which was confirmed by the SEM findings. The standardized beta, with a p value of 0.93 and $p = 0.000$, was high and positive, which indicates a high impact of service quality on consumers' satisfaction with online banking, therefore, the main hypothesis in the study was supported. See Table 3.

Table 5: The Results of Hypothesis Test

Hypothesis	Description	Results on Hypothesis
1	Customer satisfaction is positively influenced by the efficiency of e-banking services.	Supported
2	Customer satisfaction is positively influenced by the reliability of e-banking services.	Supported
3	Customer satisfaction is positively influenced by the security and privacy of e-banking services	Supported
4	Customer satisfaction is positively influenced by the responsiveness and communication of e-banking services	Supported

Discussion and Conclusion

The aim of this study was to determine the connection between customer satisfaction and the factors of e-banking service quality, the findings for the research objectives show that quality of service has a significant connection with customer satisfaction with E-Banking services, and reliability is the strongest dimension of service quality that affects customer satisfaction. In addition, the results also showed that four independent variables (reliability, efficiency and ease of use, responsiveness and communication, and security and privacy) have significant effects on the quality of E-Banking services in the Libyan banking sector, which all have a significant effect on customer satisfaction.

Any bank could gain from understanding these factors to enhance customer happiness and improve client relations. Moreover, this study helps the banking sector enhance its electronic banking features to offer better customer service. Utilizing an electronic bank's services allows customers to save time and money, making transactions more cost-efficient. This study showed that reliability, a key aspect of service quality, had the most significant effects on satisfaction of customer with E-Banking. Banking institutions have various ways to improve their services such as updating their online platforms for account access and utilizing AI to enhance customer service on their electronic platforms. However, despite security and privacy being important for customer satisfaction, their influence appears to be less than other factors of service quality, allowing customers to understand both the benefits and risks of using online banking. Furthermore, their transparency and honesty in collaborating on this research will set a standard for the banking sector to enhance the quality of its online banking offerings. Clients are able to carry out their usual transactions while the bank can still establish connections with them via electronic banking. Finally, customer satisfaction had a positive influence by responsiveness and communication. In order to expand this study, it is proposed to concentrate more on security and privacy. Future research should also examine other factors that influence the effectiveness of e-banking services and the convincing technology in consumer behavior.

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References

- [1] B. Chaimaa, E. Najib, and H. Rachid. "E-banking overview: concepts, challenges and solutions." *Wireless Personal Communications*, vol. 117, pp. 1059-1078, 2021. <https://doi.org/10.1007/s11277-020-07911-0>
- [2] H. Zewdu. "Assessment of the challenges and benefits of atm banking service (the case of commercial bank of ethiopia)," st. mary's university, 2019. <http://hdl.handle.net/123456789/4932>
- [3] O. Ahmed, B. Rahman, and technopreneurship, "Employees of commercial banks learning to unlearn: a case study on the impact of electronic banking in the commercial banks of Bangladesh." *International Journal of Business and Technopreneurship*, vol. 10, no. 1, pp. 31-50, 2020. <https://www.researchgate.net/publication/339788825>
- [4] R. Masoud, A. Ahmed, and M. Alghali. "Security Assessment of Some Libyan Banks Websites." *Wadi Alshatti University Journal of Pure Applied Sciences*, pp. 6-10, 2025. <https://www.waujpas.com/index.php/journal/article/view/96>
- [5] K. Islam, A. Bhuiyan. "Determinants of the effectiveness of internal Shariah audit: Evidence from Islamic banks in Bangladesh." *Economics, and Business*, vol. 8, no. 2, pp. 223-230, 2021. <https://koreascience.kr/article/JAKO202104142184585.pdf>
- [6] A. Mehdiabadi, V. Shahabi, S. Shamsinejad, M. Amiri, C. Spulbar, and R. Birau. "Investigating Industry 5.0 and its impact on the banking industry: Requirements, approaches and communications," *Applied Sciences*, vol. 12, no. 10, p. 5126, 2022. <https://www.mdpi.com/2076-3417/12/10/5126>
- [7] J. Fonseca. "E-banking culture: A comparison of EU 27 countries and Portuguese case in the EU 27 retail banking context." *Journal of Retailing and Consumer Services*, vol. 21, no. 5, pp. 708-716, 2014. <https://doi.org/10.1016/j.jretconser.2014.05.006>
- [8] N. Mahrakani, M. Shammot, N. Nusairat, A. Zamil, and A. Areiqat. "Customer satisfaction measurement of e-banking service quality in Riyadh, Saudi Arabia." *Academy of Strategic Management Journal*, vol. 20, no. Special Issue 2, pp. 1-19, 2021. <https://www.researchgate.net/publication/355213114>
- [9] A. Aliyu, and B. Tasmin. "The impact of information and communication technology on banks: performance and customer service delivery in the banking industry." *Int. J Latest Trends Fin. Eco. Sc.*, vol.2, no. 1, pp. 80-90, 2012.
- [10] O. Lustsik. "Can E-Banking services be profit-able?(University of Tartu Economics and Business Administration Working Paper No. 30-2004)." ed, 2004. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=612762
- [11] A. Khalfan and A. Alshawaf. "Adoption and implementation

- problems of e-banking: A study of the managerial perspective of the banking industry in Oman." *Journal of Global Information Technology Management*, vol. 7, no. 1, pp. 47-64, 2004. <https://doi.org/10.1080/1097198X.2004.10856366>
- [12] D. Sadek. "Service quality perceptions between cooperative and Islamic banks of Britain." *American Journal of Economics Business Administration*, vol. 2, no. 1, pp. 1-5, 2010. <https://thescipub.com/pdf/ajebsp.2010.1.5.pdf>
- [13] V. Simon, A. Thomas, R. Senaji, and B. Administration. "Effect of electronic banking on customer satisfaction in selected commercial banks, Kenya." *International Academic Journals*, vol. 2, no. 2, pp. 41-63, 2016. https://www.iajournals.org/articles/iajhrba_v2_i2_41_63.pdf
- [14] B. Kurdi, M. Alshurideh, and A. Alnaser. "The impact of employee satisfaction on customer satisfaction: Theoretical and empirical underpinning." *Management Science Letters*, vol. 10, no. 15, pp. 3561-3570, 2020. <https://doi.org/10.5267/j.msl.2020.6.038>
- [15] R. Oliver. "Measurement and evaluation of satisfaction processes in retail settings." *Journal of Retailing*, vol. 5, pp. 25-48, 1981. <http://psycnet.apa.org/psycinfo/1984-10995-001>
- [16] P. Kotler, M. Brady, M. Goodman, and T. Hansen. *Marketing management: European edition*. Pearson Higher Ed, 2019. https://books.google.com/books/about/Marketing_Management.html?id=YZ-fDwAAQBAJ
- [17] H. Asiyambi, and A. Ishola. "E-banking services impact and customer satisfaction in selected bank branches in Ibadan metropolis, Oyo state, Nigeria." *Accounting*, vol. 4, no. 4, pp. 153-160, 2018. <https://scispace.com/pdf/e-banking-services-impact-and-customer-satisfaction-in-ops8nmn3mb.pdf>
- [18] L. Bei, Y. Chiao. "The determinants of customer loyalty: an analysis of intangible factors in three service industries." *Journal of Service Management*, vol. 16, no. 3/4, pp. 162-177, 2006. <https://doi.org/10.1108/10569210680000215>
- [19] L. Zhou. "A dimension-specific analysis of performance-only measurement of service quality and satisfaction in China's retail banking." *Journal of Services Marketing*, vol. 18, no. 7, pp. 534-546, 2004. <https://doi.org/10.1108/08876040410561866>
- [20] A. Ahmed, E. Geepalla, and R. Masoud. "Challenges and Opportunities of E-Learning for Libyan Universities: A Case Study of Wadi Alshatti University." *Wadi Alshatti University Journal of Pure and Applied Sciences*, vol. 2, no. 2, pp. 1-5, 2025. <https://www.waujpas.com/index.php/journal/article/view/157/104>
<https://waujpas.com/index.php/journal/article/download/156/10>
- [21] A. Tamjidyamcholo, M. Baba, H. Tamjid, and R. Gholipour. "Information security–Professional perceptions of knowledge-sharing intention under self-efficacy, trust, reciprocity, and shared-language." *Computers & Education*, vol. 68, pp. 223-232, 2013. <https://doi.org/10.1016/j.compedu.2013.05.010>
- [22] Fernback, and Z. Papacharissi. "Online privacy as legal safeguard: the relationship among consumer, online portal, and privacy policies." *New Media & Society*, vol. 9, no. 5, pp. 715-734, 2007. <https://doi.org/10.1177/1461444807080336>
- [23] J. Zhang, F. Hassandoust, and J. Williams. "Online customer trust in the context of the general data protection regulation (GDPR)." *Pacific Asia Journal of the Association for Information Systems*, vol. 12, no. 1, p. 4, 2020. <https://aisel.aisnet.org/pajais/vol12/iss1/4/>
- [24] R. Agarwal, S. Rastogi, and A. Mehrotra. "Customers' perspectives regarding e-banking in an emerging economy." *Journal of Retailing and Consumer Services*, vol. 16, no. 5, pp. 340-351, 2009. <https://doi.org/10.1016/j.jretconser.2009.03.002>
- [25] S. Gourida. "The impact of service quality on customer satisfaction; An empirical study on banking services in Djelfa." *Journal of Economics and Finance (JEF)*, vol. 8, no. 1, 2022. <https://www.asjp.cerist.dz/en/downArticle/150/8/1/176575>
- [26] N. Sathiyavany, S. Shivany, and H. Invention. "E-banking service qualities, e-customer satisfaction, and e-loyalty: a conceptual model." *The International Journal of Social Sciences and Humanities Invention*, vol. 5, no. 6, pp. 4808-4819, 2018. <https://valleyinternational.net/index.php/theijsshi/article/view/1323>
- [27] P. Agarwal, and C. Josh. "E-banking Service Quality Parameters" Impact on Customer Satisfaction." *International Journal of Marketing & Financial Management*, vol. 4, no. 2, pp. 01-10, 2016.
- [28] A. Zeleke. "The Effect of Service Quality on Customer Satisfaction; A Case Study of Abay Bank Share Company," St. Mary's University, 2016.
- [29] F. Asfaw. "The Effect of E-Banking Service Quality on Customer Satisfaction in The Banking Sector of Ethiopia (case study: Five Selected Grade Four Branch Customers of CBE)," St. Mary's University, 2017. <https://sl1nk.com/FtyrM>
- [30] A. Toor, M. Hunain, T. Hussain, S. Ali, and A. Shahid. "The impact of e-banking on customer satisfaction: Evidence from banking sector of Pakistan." *Journal of Business Administration Research*, vol. 5, no. 2, pp. 27-40, 2016. <https://doi.org/10.5430/jbar.v5n2p27>
- [31] R. DeVellis. *Scale development: Theory and applications*. Sage publications, 2012. https://books.google.com/books/about/Scale_Development.html?id=vmwBHYuchfAC
- [32] R. Masoud, A. Ahmed, and M. Alghali. "Security Assessment of Some Libyan Banks ebsites." *Wadi Alshatti University Journal of Pure and Applied Sciences* (2025): 6-10. <https://www.waujpas.com/index.php/journal/article/view/96>
- [33] J. Creswell. *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications, 2013. <https://l1nq.com/mwbww>
- [34] J. Hair, W. Black, B. Babin, R. Anderson, and R. Tatham. *Multivariate data analysis*. Prentice Hall, Upper Saddle River, New Jersey, 2010. <https://www.scirp.org/reference/referencespapers?referenceid=1954037>
- [35] J. Gerring. *Social science methodology: A unified framework*. Cambridge University Press, 2011. <https://books.google.com.ly/books>
- [36] Z. Awang. "SEM Made Simple: A Gentle Approach to Learning Structural Equation Modeling." *UniSZA Institutional Repository*, 2015. <http://eprints.unisza.edu.my/id/eprint/3180>
- [37] R. Kline, *Principles and practice of structural equation modeling*. Guilford publications, 2015.
- [38] C. Fornell, and D. Larcker. "Evaluating structural equation models with unobservable variables and measurement error." *Journal of marketing research*, vol. 18, no. 1, pp. 39-50, 1981. <https://doi.org/10.2307/3151312>
- [39] B. Byrne. "Structural Equation Modeling With AMOS: Basic Concepts, Applications, and Programming." 3rd Edition, New York, 2016. <https://doi.org/10.4324/9781315757421>
- [40] P. Duarte, and M. Raposo. "A PLS model to study brand preference: An application to the mobile phone market." in *Handbook of partial least squares*: Springer, 2010, pp. 449-485. <https://www.researchgate.net/publication/227061764>