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Trust and Security Impact on the Customers' Acceptance of E-Payment in Algeria: An Application of the Extended TAM

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Abstract: The primary objective of this study is to identify the key elements that are strongly associated with the intention of bank customers in Algeria to use electronic payment services.About 150 questionnaires were handed out among the Algerian bank customers by using clustered sampling in order to perform the statistical analysis for data analysis and findings.The Technology Acceptance Model (TAM) was utilized as the theoretical framework for this study.The findings indicate that there is a substantial relationship between trust in online payment and the intention to adopt digital payment methods among bank customers in Algeria. In contrast, the influence of security on the inclination to embrace electronic payment methods was determined to be negligible.This extensive study enhances our knowledge of the key determinants that significantly influence the inclinations of Algerian bank clientele towards adopting digital payment solutions instead of conventional means. The transition towards digital payments offers various benefits, such as enhanced efficiency, time conservation, and cost-efficiency.

Keywords: *Trust, online payment, Security, TAM.*

1. Introduction

In recent years, there has been a significant shift towards digitalization in the worldwide financial transaction environment. Algeria, as a nation with a strong interest in technical progress, has also embraced this trend. E-payment systems have become increasingly prevalent as a viable and efficient substitute for conventional cash-based transactions, encompassing a diverse range of digital financial activities. The widespread adoption of electronic payment systems in Algeria, like to other countries, is contingent upon the crucial factors of trust and security (Cheriet & Ghanem, 2018).In 2009 Algeria launched its new CIB card e-payments program, allowing customers to pay monthly electronic bills for the first time. During the first quarter of 2010, there were a total of 656 833 CIB cards distributed nationwide with over 621 ATMs and 2 750 sales outlets in service. Due to that, the number of the CIB card that have used to do the payment transactions in 2015 were only 253586 in 2015. Hence, the issue said that there is a lack of exposure of electronic payment among Algerian customers' banks (Bounefla, 2018). Based on the statistics above the research revealed that the access and/or unwillingness to use services such as debit cards and credit cards from Algerian citizens are limited (Cheriet & Ghanem, 2018).

The use of electronic payment systems necessarily requires a departure from conventional financial frameworks, which traditionally relied on physical currency transactions as the prevailing method. During this period of transition, Algerian consumers, similar to consumers globally, exhibit a strong inclination towards seeking guarantees about the safety, security, and preservation of their privacy in financial transactions. The establishment of trust in the businesses that provide e-payment services, along with the implementation of strong security measures, becomes crucial in motivating clients to adopt this digital revolution.Accordingly, in accordance with Aladwani, (2001)assertion, it may be posited that the primary issues faced by online banking revolve around security and the

establishment of user trust. It is reasonable to hypothesize that these characteristics are likely to be applicable within the realm of online payment, given that online payment serves as a fundamental component of electronic payment systems. Moreover, the Technology Acceptance Model (TAM) functions as a beneficial conceptual framework for comprehending users' perceptions and adoption of novel technology. The Technology Acceptance Model (TAM) proposes that consumers' acceptance of technology is significantly influenced by their perceptions of both the ease of use and utility of the technology (Davis, 1989). Within the Algerian setting, the Technology Acceptance Model (TAM) provides a valuable framework for examining the influence of trust and security on consumers' opinions of the ease of use and utility of e-payment systems. This discussion explores the complex interplay between trust, security, and the Technology Acceptance Model (TAM) in relation to the adoption of electronic payment systems by customers in Algeria. Through an examination of the complex dynamics between these variables, our objective is to analyze the obstacles, potential advantages, and tactics that have the potential to influence the trajectory of e-payment implementation in this specific country located in North Africa. By undertaking this endeavor, we not only analyze all elements of trust and security but also emphasize their crucial significance in shaping the course of Algeria's digital financial ecosystem, while taking into account the perspectives offered by the Technology Acceptance Model (TAM). Thus, this paper aims to enhance previous literature by introducing a framework comprising several components that contribute to a deeper comprehension of acceptance in the context of electronic payment as well as propose a comprehensive framework that incorporates the interplay between trust, security, and consumer acceptability of electronic payment systems through the application TAM model.

Literature Review

2.1 The evolution of the e-payment in Algeria.

The Algerian banking system has been through several stages of development, including the colonial era, the phase of sovereignty, nationalization and socialization, the phase of restriction, and the phase of liberalization. Presently, the Algerian banking industry has a total of 20 banks, of which eight are affiliated with the public sector and fourteen operate within the private sector (Bank of Algeria, 2019).The banking sector in Algeria is seeing ongoing growth, with the Bank of Algeria overseeing the effective management of particular obligations and foreign exchange control (SATIM) by the end of 2017. According to (Oxford Business Group, 2018), the interbank transfer automation society is responsible for the operation of the national interbank card (CIB), national ATM, and EFTPOS networks in Algeria. Additionally, they are involved in the development and management of payment platforms. Currently, SATIM is being attended by a total of 16 banks, together with the Algerian Post. The primary objective of SATIM was to create a robust electronic payment infrastructure that could meet the needs of prominent organizations, including Algerian airlines and hotels (Cheriet & Ghanem, 2018). Consequently, the formation of a collaborative enterprise referred to as Algeria for Electronic Banking Services. Various types of companies, including superior, corporate, commercial, technical, and business entities, offer a diverse range of services to service providers. These services are characterized by a high level of protection and security, facilitating the smooth execution of operations. Specifically, this company specializes in providing remote banking services, as well as management and financial information security solutions to banks and other financial institutions. The nature of these services is tailored to meet the specific requirements of individual customers. The company was established in January 2004 with a primary focus on process improvements and restructuring aimed at modernizing banking and e-payment services.

2.1 The Acceptance of E-payment

The concept of cashless transactions is widely recognized as an essential component of everyday life, encompassing a wide range of products and services. It serves as a crucial catalyst for economic growth, both in terms of employment opportunities and overarching objectives. Consequently, it is imperative that cashless systems are readily accessible and adequately developed to meet the evolving demands of society, necessitating ongoing enhancements and alignment with technological advancements.In a study done by study (Yadu & Sharma, 2021)

have justify the need for trust and security key factor for online payment for the following reasons: lack of trust on online payment comes due to that electronic payments have a long history of fraud, misuse and low credibility as well as a new system without establishing a positive reputation. Potential customers often refer to the risk of why they do not trust paid services and therefore do not purchase the internet. As for the security factor, the system of online payment on the internet is an easy target for embezzlement and personal data theft. This is due to customers being required to provide credit card and payment account information and other personal information online. This data is sometimes transmitted in a non-secure way. Providing these details by mail or over the telephone also increases security risks (Yadu & Sharma, 2021).Similarly, (Cheriet & Ghanem, 2018), done a study in Algeria which found out that a mere 1.5 million individuals, out of a total population of over 44 million, possess debit cards in Algeria. This statistic indicates that the majority of Algerian banking customers continue to favor traditional methods of payment over technological alternatives. So, Algeria must improve its financial system to align with contemporary standards, necessitating the reconstruction of its payment platform this is due to Algeria currently is facing challenges as a result of societal resistance towards embracing new payment methods, such as credit and debit cards. Therefore, it can be observed that the electronic payment system is now in the nascent phase and has not yet met the anticipated demands of Algerian clients in Algeria. In order to foster economic growth, the government should carefully consider various factors, including the improvement of the security security systems, and the promotion of trust among customers.The coming subsections will show in details how trust and security factors affect the customers' acceptance of the electronic payment methods.

2.2 Trust

Trust means a party's ability to be open to another party's actions, based on the presumption that the other party will conduct a specific action important to the trustee, irrespective of the ability to monitor or control that other party as adopted from (Kim et al., 2010). Generally, trust is believed to be the key in its relationships with other variables, which needs to be clarified in our study. Due to the developing stage of online payment in China being the main subject of our research, we took it for granted that the payment environment with both traditional and online payments available prompts consumers to make comparisons between them. With the development of online payment, consumers' understanding and comparison of the two payment means influence the degree of their trust in certain payments via their gathered experiences in e-commerce. Consequently, consumers gain more experiences and form a clear comparison between online payment and traditional payment, which helps to establish their trust in new technology as long as the comparison shows more attractiveness to online payment.In technology adoption, confidence in the system plays a major role. Researchers remark that the use of Internet banking is mainly due to confidence and risk tolerance. On top of that, trust in online banking is necessary to prevent financial transaction uncertainty in order to encourage consumers to use it (Kim et al., 2010). Confidence has indeed been identified as a leading factor in the use of EPS by consumers and is more susceptible to use EPS by consumers with higher levels of confidence. Moreover, the study from Kim et al., (2010) has been stated that an EPS cannot be used widely without confidence as it is not possible. Additionally, (Teoh et al., 2013) said that without a program that consumers can trust, the widespread of using e-payment will be extremely difficult.

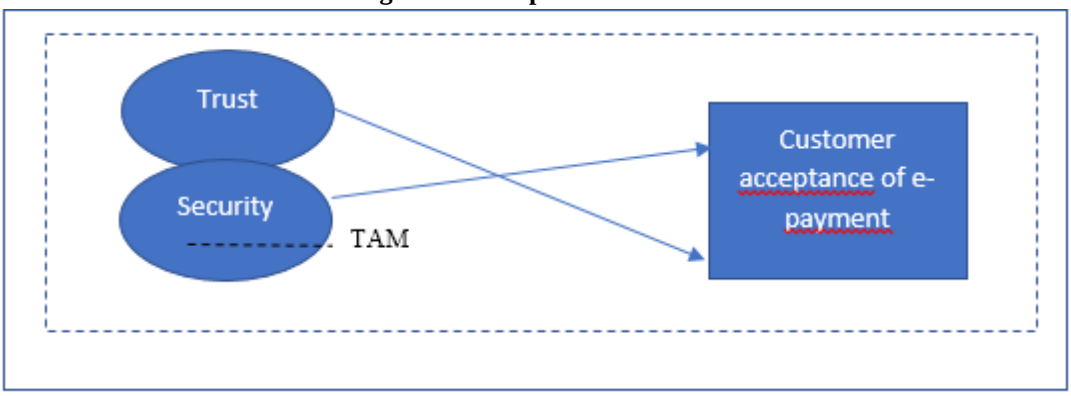
H1: Customers trust has a positive impact on his/her attitude towards using electronic payment.

2.3 Security

According to (Tsiakis & Sthephanides, 2005) security is a set of procedures, mechanisms and computer programs to authenticate the source of information and guarantee the integrity and privacy of the information (data) to abstain this circumstance to lead to a hardship (economic) of data or network resources.Plus, Security is a major obstacle to e-payment systems use by online banking ((Teoh et al., 2013). Although consumers have strong faith in their selected bank, they still fall short of faith in technology. Based on (Sathye, 1999) 73% avoided online payment in the banking sector as they are anxious about the safety and security of transactions on the Internet. Other than that, the decisions of consumers to use an EPS according to Kim et al., (2010) would depend significantly on the security

statements released, as they can improve customer protection and trust in EPS. As a consequence, EPS security claims were found to have a critical impact on the implicit trust of consumers in online payment systems.
H2: Security will positively influence the use of Internet payment.

Figure 1 Conceptual framework



2. Methodology

This study investigates the factors that influence the acceptance of electronic payment systems among clients of Algerian banks. Based on the aforementioned literature review, two key aspects have been highlighted, namely trust and security. A survey instrument was devised with the purpose of collecting data from clients of many banks in Algeria, encompassing a total of 194 participants. A total of 194 respondents from several states in Algeria, including Alger, Batna, Msila, and Setif, were administered questionnaires. The survey is conducted through both in-person and online modes of administration. The items utilized in the questionnaire were derived from prior research projects. In order to enhance comprehensibility for the participants, the questionnaire was translated into the Arabic language. The researcher employs SPSS 26.0 software for data analysis, while the questionnaire consists of two sections. Section 1 encompasses inquiries pertaining to demographic characteristics, while Section 2 evaluates the factors influencing customers' inclination to adopt electronic payment methods. Participants are requested to express their degrees of agreement using the Four-point Likert scale, ranging from "1" (strongly disagree) to "4" (strongly agree).

3. Results and Findings

3.1 Demographic Information.

Table 4.1 below represents the demographic characteristics of 194 respondent. Which was in this paper the Algerian bank consumer.

Table 3.1 Demographic Information.

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
MALE	118	60.8	60.8	60.8
FEMALE	76	39.2	39.2	100.0
Total	194	100.0	100.0	
Age.	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Under 21	46	23.7	23.7	23.7
21-30	89	45.9	45.9	69.6
31-40	59	30.4	30.4	100.0
Total	194	100.0	100.0	
Occupation	**Frequency**	**Percent**	**Valid Percent**	**Cumulative**

				Percent
Student	75	38.7	38.7	38.7
Government employee	33	17.0	17.0	55.7
Company employee	47	24.2	24.2	79.9
Self-employment	32	16.5	16.5	96.4
Retiree	7	3.6	3.6	100.0
Total	194	100.0	100.0	

Referring to the tables 4.1above, the first section regarding gender, the composition of the sample is primarily male (60.8%), suggesting a notable imbalance in gender representation. In terms of age distribution, it is seen that a significant majority of the respondents fall within the 21-30 age bracket, accounting for 45.9% of the total sample. Additionally, a considerable proportion of respondents, approximately 23.7%, are below the age of 21. In relation to employment, students are the most significant demographic (38.7%), with company personnel following closely behind (24.2%). The results indicate that the survey sample had a greater proportion of younger participants, specifically persons in the student demographic. The examination of the demographic makeup can provide valuable insights for future investigations into the potential impact of these characteristics on trust, perceptions of security, and the acceptance of e-payment systems. This, in turn, can contribute to a more comprehensive comprehension of the adoption of e-payment in Algeria.This study examines the demographic factors of gender, age, and occupation in relation to the adoption of e-payment in Algeria. The findings reveal a gender disparity within the sample, with a greater proportion of male participants (60.8%). Additionally, the majority of respondents fall within the 21-30 age bracket (45.9%) and primarily identify as students (38.7%). The examination of these demographic factors serves as a fundamental basis for scholarly investigation into the use of electronic payment methods. Further investigation is warranted to examine the possible imp

act of gender, age, and employment on trust, security concerns, and acceptability levels pertaining to e-payment systems. This line of inquiry has the potential to unveil distinct patterns of adoption and preferences within various demographic cohorts. Gaining a comprehensive understanding of these relationships is crucial in order to develop precise strategies aimed at promoting the adoption of e-payment systems and assuring the provision of inclusive financial technology solutions in Algeria.To see which variable from trust and security has impact on the customers' acceptance of e-payment table 4.2 will show in detail.

Table 4.2: Regression Analysis.

Coefficients							
	Unstandardized Coefficients		**Standardized Coefficients**				
Model	B	Std. Error	Beta	t	R Square	F	Sig.
(Constant)	11.492	1.617		7.108	.139	5.962	.000
TR	.452	.137	.399	3.291			.002
S	-.074	.128	-.070	-.576			.566

Dependent Variable: Customer Acceptance (CA).

By referring to table 4.2 of the regression analysis, the constant term in the model is seen to be 11.492, indicating the projected baseline for e-payment acceptance in the absence of trust and security considerations. The statistical significance of this constant is evident, as seen by its low p-value (0.000), hence emphasizing its significance. Subsequently, the variable "Trust" (TR) is identified as a crucial determinant of e-payment acceptance. According to the findings, there is a positive relationship between trust and the acceptance of e-payment, with a coefficient

estimate of 0.452. This suggests that for every one-unit rise in trust, there is an estimated increase of 0.452 units in the acceptance of e-payment. The statistical significance of this link is indicated by a positive standardized coefficient (Beta) of 0.399 and a low p-value (0.002). Trust is a prominent determinant that exerts a substantial influence on the level of acceptance exhibited by customers towards electronic payment systems within the specific setting of Algeria.In contrast, the variable "Security" (S) does not demonstrate a statistically significant influence on the acceptability of e-payments. The coefficient pertaining to the variable of Security exhibits a negative value of -0.074. This indicates that, on average, a marginal rise of one unit in security is linked to a little reduction in the acceptance of e-payments. Nevertheless, the observed association lacks statistical significance, as indicated by a relatively large p-value of 0.566. Based on the present investigation, it is evident that security considerations may not have a prominent position as a motivating factor for the use of e-payment methods in Algeria.Moving on now to the relationships between the study variables, table 4.5

Table 3.5: Descriptive statistics and Correlation.

Correlations				
		CA	TR	S
CA	**Pearson Correlation**	1	.367**	.113
	Sig. (2-tailed)		.001	.328
	N	77	77	77
TR	**Pearson Correlation**	.367**	1	.458**
	Sig. (2-tailed)	.001		.000
	N	77	77	77
S	**Pearson Correlation**	.113	.458**	1
	Sig. (2-tailed)	.328	.000	
	N	77	77	77
****. Correlation is significant at the 0.01 level (2-tailed).**				

**. Correlation is significant at the 0.01 level (2-tailed).

By referring to the Table 4.5, the investigation of correlation analysis provides valuable insights into the interconnections between Customers' Acceptance of E-Payment (CA), Trust (TR), and Security (S) within the framework of e-payment adoption in Algeria. To begin with, it is worth noting that a statistically significant positive correlation exists between the variables CA and TR. The correlation coefficient between these variables is calculated to be 0.367, which is considered to be statistically significant at a p-value of 0.001. This finding suggests that there is a positive relationship between customers' acceptance of e-payment and their level of trust in the e-payment system. Trust plays a significant influence in influencing the acceptance of e-payment among customers in Algeria.Furthermore, it is seen that the correlation between CA and S exhibits a weak and non-statistically significant relationship (coefficient = 0.113, p-value = 0.328). This implies that the perceived security of the e-payment system may not have a substantial impact on the acceptance of e-payment within this particular context.Finally, it is worth noting that there exists a robust and statistically significant positive correlation between TR and S, with a coefficient of 0.458 and a p-value of 0.000. This discovery suggests that there is a positive correlation between the growth of trust in the e-payment system and the enhancement of attitudes regarding security. Trust and security are closely interconnected elements that mutually strengthen one another.In brief, trust is identified as a prominent factor influencing the adoption of e-payment in Algeria, whereas security, while exhibiting a positive relationship with trust, does not exert a substantial independent impact on acceptance. These observations can provide valuable guidance for developing strategies aimed at increasing the adoption of e-payment systems through the establishment and preservation of trust in the system.

4. Conclusion

In conclusion, this research has provided insights into the intricate dynamics between trust, security, and customers' adoption of electronic payment systems within the Algerian setting. The results highlight the importance of trust as a major element that influences the adoption of electronic payment systems. The presence of a robust and significant positive association between trust and acceptance of e-payment indicates that prioritizing the establishment of trust in the e-payment system is of utmost importance for policymakers and businesses aiming to encourage its extensive adoption in Algeria. On the other hand, the association between security perceptions and e-payment acceptance is quite weak and not statistically significant. This suggests that although security is still an important aspect of e-payment systems, it may not be the main factor influencing customer acceptance in this particular scenario. Instead, it is recommended that efforts be focused on improving trust-building strategies. Furthermore, it is worth noting that there exists a robust and significant positive correlation between trust and security. This correlation suggests a mutually beneficial association between these two variables, underscoring the significance of adopting a comprehensive approach that simultaneously tackles both trust and security considerations. The evolving nature of the digital payment ecosystem renders these findings significant for stakeholders seeking to promote the smooth integration of e-payment systems in Algeria and perhaps in analogous developing economies. Moreover, this study has employed, adapted, and verified the applicability of the Technology Acceptance Model (TAM) in the context of digital payment adoption among consumers of banks in Algeria.Thus, it is advisable to conduct additional research on the intricate interplay of trust, security, and acceptance within this particular setting. This will help enhance strategies and policies for the mutual advantage of consumers and the wider e-payment ecosystem.

Limitations and recommendations for future studies

This study primarily examined a limited sample of four distinct states within Algeria, thereby limiting the generalizability of the findings to the broader Algerian context. Therefore, it is advisable to conduct a comparative analysis of user acceptance across various regions in Algeria in order to investigate the potential impact of geographical and environmental factors on customers' acceptance and intention to utilize digital payment methods. When advocating for the pursuit of additional education, it is important to consider additional elements such as religion, geography, and other relevant factors. It is advisable to take into account the potential moderating and mediating effects. The current investigation examined the level of acceptance of e-payment among clients of a bank in Algeria. It is recommended that future researchers extend their focus to include the examination of digital payment intention among consumers of banks in the broader North African region, beyond just Algeria. Additionally, the study placed emphasis on the Technology Acceptance Model (TAM) as a framework for understanding technology adoption. For future research, it is recommended that the Unified Theory of Acceptance and Use of Technology (UTAUT) be considered.

5. References

[1] Aladwani, A. M. (2001). Online banking: A field study of drivers, development challenges, and expectations. International Journal of Information Management, 21(3), 213–225. https://doi.org/10.1016/S0268-4012(01)00011-1

[2] Bank-of-algeria. (2019). www.bank-of-algeria.dz. https://www.bank-ofalgeria.dz/html/banque.htm

[3] Bounefla, S. (2018). The Interbank Card (CIB) and the legal system of its contract ". April.

[4] Cheriet, S., & Ghanem, H. (2018). The Role of Electronic Payment Systems In The Development Of The Algerian Banking System. Roa Iktissadia Review, 08(02), 213. https://doi.org/10.37137/1416-008-002-014

[5] Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly: Management Information Systems, 13(3), 319–339. https://doi.org/10.2307/249008

[6] Kim, C., Tao, W., Shin, N., & Kim, K. S. (2010). An empirical study of customers' perceptions of security and trust in e-payment systems. Electronic Commerce Research and Applications, 9(1), 84–95. https://doi.org/10.1016/j.elerap.2009.04.014

[7] Oxford Business Group. (2018). Algeria 2018.

[8] Sathye, M. (1999). Adoption of Internet banking by Australian consumers: an empirical investigation. International Journal of Bank Marketing, 17(7), 324–334. https://doi.org/10.1108/02652329910305689

[9] Teoh, W. M. Y., Chong, S. C., Lin, B., & Chua, J. W. (2013). Factors affecting consumers' perception of electronic payment: An empirical analysis. Internet Research, 23(4), 465–485. https://doi.org/10.1108/IntR-09-2012-0199

[10] Tsiakis, T., & Sthephanides, G. (2005). The concept of security and trust in electronic payments. Computers and Security, 24(1), 10–15. https://doi.org/10.1016/j.cose.2004.11.001

[11] Yadu, A., & Sharma, V. (2021). Security Issues and Solutions in E-Payment Systems. International Journal of Advance Research in Computer Science and Management Studies, 9(7), 9–14.