The Moderating Role of Product Innovation In The Impact of Artificial Intelligence on Customer Trust And Consumer Well-Being

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Abstract- *This paper focuses on the effect of artificial intelligence on customer trust and well-being with the moderating role of product innovation. Across the world, the Internet of Things (IoT), Cloud computing, big data, and blockchain are the growing technologies that may generate winners and losers. Now, artificial Intelligence plays a crucial role in the corporate world. In this study, the simple random sampling technique is adopted. The employees and customers in the banking industry are respondents. The standardized measurement scale is used to collect the data. The factor analysis, discriminant analysis, and path coefficients were performed. The findings were the influence of artificial intelligence on customer trust and customer well-being is positive and there is a moderation effect of product innovation in the relationship between artificial intelligence, customer trust, and customer well-being. The implementation of Artificial Intelligence is consequential in this world which is innovative and smart. Indian banks are dynamically capitalizing on sophisticated technologies. Artificial intelligence has the probability to identify frauds, moderate uncertain risks, and assist in controlling regulatory observance.*

Keywords- Artificial Intelligence, Banking Industry, Customer Trust, Customer Well-Being, and Product Innovation

I. INTRODUCTION

Digital disruption is reclassifying ventures and having an impact on organizations' capability. Each industry is surveying choices and embracing ways of making esteem in the innovation-driven world. The financial area is seeing noteworthy changes: the premier being the ascent in client centricity [1]. Educated clients, presented with trend-setting innovations in their everyday lives, anticipate that banks should convey consistent encounters [2]. To measure up to these assumptions, banks have extended their industry scene to retail, data innovation, and telecom to empower administrations like portable banking, e-banking, and constant cash moves. While these progressions have empowered clients to benefit the vast majority of the financial administrations readily available whenever, anyplace, it has likewise accompanied an expense for the financial area [3]. There is an expanded exchange of basic data over virtual organizations that are defenseless against digital assaults and deceitfulness. These episodes influence the productivity of banks, yet additionally, hamper banks' trust and relationship with clients. The ascent of online security dangers in financial exchanges has fixed unofficial laws [4]. However these guidelines help screen online monetary exchanges, and it has controlled banks' capacity to stay aware of the advanced change.

Artificial Intelligence is the future of banking as it brings the force of cutting-edge information investigation to battle deceitful exchanges and further develop consistency [5]. Artificial intelligence calculation achieves against illegal tax avoidance exercises in a couple of moments, which in any case require hours and days. Computer-based intelligence likewise empowers banks to oversee immense volumes of information at record speed to get significant experiences from it. Highlights like simulated intelligence bots, computerized installment counselors, and biometric misrepresentation discovery instruments lead to greater administrations to a more extensive client base. This means expanded income, diminished expenses, knowledge self-efficacy [23], and a lift in benefits [6].

OBJECTIVES OF THE STUDY

1. To observe the impact of Artificial Intelligence in the Banking Industry.
2. To know the relationship between customer trust and well-being in the Banking Industry.
3. To determine the moderating effect of product innovation on the relationship between artificial intelligence with customer trust and well-being.

II. LITERARY REVISED

Artificial Intelligence in the Banking Industry:

The application of artificial intelligence and machine learning to various capabilities inside the financial business brings empowered them to the table for undeniably more customized and effective client support [5]. That's what by accomplishing this, banks have likewise had the option to acquire better bits of knowledge about their clients' inclinations and assumptions from the bank [7, 25]. Appropriately, the mechanization of back-end work processes has shown improved results. Irregularity discovery can be utilized to expand the precision of charge card extortion recognition and hostility to illegal tax avoidance. Humanoid chatbot connection points can be utilized to increment effectiveness and diminish costs for client associations [8, 11]. Fitted items can be proposed to clients by taking a gander at verifiable information, doing a gamble with the investigation, and killing human mistakes from hand-made models [9]. Picture/face acknowledgment utilizing ongoing camera pictures and high-level AI methods, for example, profound learning can be utilized at ATMs to distinguish and forestall fakes/violations.

Customer Trust:

A definitive objective of customer trust is to offer clients something of significant worth past your items and administrations. While items might draw in clients at first, a separate context-oriented trust keeps them around [12, 26]. The importance of trust causes clients to draw in with your image. The degree of trust brings about a superior client experience. The fact that makes customer potential makes development of the motor. Client information is the fuel for that motor. The excellence of joining information progressed examination and present-day correspondence stages are that you can expect needs, make custom reactions to requests at scale, construct new items and administrations for miniature sections, and retarget possible clients continuously [13, 23].

Customer Well-Being:

In the information era, when banks need to maintain their customers due to the growing competitiveness, the consideration of the informational structure inside customers' minds and its realistic measurement can be of value regardless of the aforementioned issues [14]. In this regard, introducing the associative network memory model of brand knowledge has defined image as the customer perception of a brand, reflecting the idea that primary and secondary brand associations are held in the customer's memory [22, 24]. Similarly, it is claimed in the customer well-being area that customers have certain value-laden beliefs in different life domains following the psychological life space (PLS) theory. Investigating various customer life domains not only leads

topresenting a more reliable explanation of consumer well-being, but also introduces new constructs, metrics, and casual relations [15].

Product Innovation:

Many banks have been putting resources into advanced stages and applications that permit clients to get to their records, take care of bills, and make exchanges from their cell phones or different gadgets [16]. This has made finances more helpful and available for some individuals, particularly during the COVID-19 pandemic when in-person visits to bank offices were restricted [24]. A few banks are investigating the utilization of blockchain innovation to work on the proficiency and security of monetary exchanges [17, 25]. Artificial intelligence can likewise be utilized to break down client information and give customized monetary counsel.

III. METHODOLOGY

The researcher selects bank employees and customers in Tiruchirappalli as a sample of the study. In this research, the simple random sampling method was used to concise the respondents from the population. According to Morgan's sample size table, 384 is the sample size. Data was collected through Google Forms. The respondents are suggested to fill out the measurement scale. The Google forms did not allow the respondents to skip or unanswered questions. Finally, 447 responses received a valid response and then an analysis was made.

MEASURES:

For data collection, the researcher used a standardized measurement scale from previous studies. Attitude toward artificial intelligence has 16 items which are adapted from Schepman and Rodway (2020), Customer trust has 5 items that are adapted from Qureshi *et al.,* (2009), well-being has 24 items adapted from Kinderman (2011), and Product innovation has 12 items which are adapted from Alegre *et al.,* (2006).
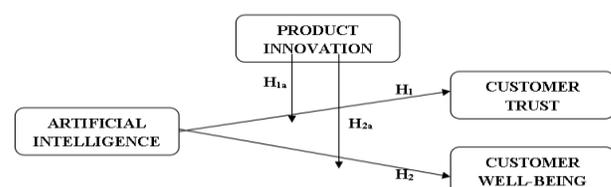
THE CONCEPTUAL FRAMEWORK:

Figure 1.1: The Conceptual Model of the Study

HYPOTHESES DEVELOPMENT:

- **H₁:** Artificial Intelligence is positively related to Customer Trust
- **H₂:** Artificial Intelligence is positively related to Customer Well-Being
- **H₁ₐ:** Product Innovation moderates the relationship betweenArtificial Intelligence and Customer Trust
- **H₂ₐ:** Product Innovation moderates the relationship betweenArtificial Intelligence and Customer Well-Being

IV. RESULTS AND DISCUSSION

Among 447 respondents, 263 were males (58.8%) and 184 were females (41.2%). In the age category, 157 (35.1%) respondents were less than 30 years old, 115 (25.7%) were between 31 to 50 years, 105 (25.7) were between 51 to 70 years old, and 63 (14.1%) were 71 years and above. In the income category, 92 (20.6%) respondents have less than Rs. 100000, 134 (29.9%) respondents have Rs. 100001 – Rs. 300000, 109 (24.4%) respondents have Rs. 300001 – Rs. 500000, and 112 (25.1%) respondents have Rs. 500001 and above. According to experience in banking, 97 (21.7%) respondents have less than one year of experience, 104 (23.3%) respondents have 2 - 3 years of experience, 130 (29.1%) respondents have 4 - 5 years of experience, and 116 (25.9%) respondents has 6 years and above of experience. Based on the opinion of the Implementation of artificial intelligence in banking, 41 (09.2%) respondents strongly disagreed, 32 (07.6%) respondents disagreed, 67 (14.9%) respondents were moderate, 122 (27.3%) respondents agreed, and 185 (41.4%) respondents were strongly agreed.

Table 1: Descriptive Statistics

Variable	Mean	sd	Alpha
Artificial Intelligence	2.984	0.750	0.886
Customer Trust	3.713	1.892	0.810
Customer Well-Being	3.359	2.872	0.728
Product Innovation	2.062	1.923	0.951

Source: Field Data

The variables having the mean and standard deviation are in an acceptable range. The Cronbach's alpha is more than 0.7. The alpha value of artificial intelligence is 0.886, customer trust is 0.810, customer well-being is 0.728, and product innovation is 0.951.

Table 2: ANOVA of the Variables

Variable		Sum of Square	df	f-test	p-value
Artificial Intelligence	Between Groups	6.691	4	0.726	0.027
	Within Groups	252.697	443		
	Total	259.387	447		
Customer Trust	Between Groups	3.348	4	0.568	0.124
	Within Groups	148.883	443		
	Total	152.231	447		
Customer Well-Being	Between Groups	4.285	4	0.627	0.010
	Within Groups	196.823	443		
	Total	201.108	447		
Product Innovation	Between Groups	2.415	4	0.782	0.041
	Within Groups	123.155	443		
	Total	125.570	447		

From the above table, the ANOVA was performed, artificial intelligence (f = 0.726, p=0.027) is significant at 0.05 significant level, customer trust (f = 0.568, p=0.124) is not significant, customer well-being (f = 0.627, p=0.010) is significant at 0.01 significant level, and product innovation (f = 0.782, p=0.041) is significant at 0.05 significant level.

Table 3: Correlation among the Dimensions

Variable	Artificial Intelligence	Customer Trust	Customer Well-Being	Product Innovation
Artificial Intelligence	0.37**			
Customer Trust	0.71*	0.24		
Customer Well-Being	0.86**	0.63**	0.75*	
Product Innovation	0.83**	0.75*	0.81**	0.57**

(Note: ** Correlation is significant at the 0.01 level (2-tailed); and * Correlation is significant at the 0.05 level (2-tailed))

Among these variables, there is a positive effect of artificial intelligence on customer trust and customer well-being. The path analysis renders support to artificial intelligence as positively and significantly related to customer trust (H1), artificial intelligence is positively and significantly related to customer well-being (H2), and Product innovation moderates the relationship between artificial intelligence and customer trust such that at high levels of product innovation, artificial intelligence has a closer effect on customer trust (H1a), and Product innovation moderate the relationship between artificial intelligence and customer well-being such that at high levels of product innovation, artificial intelligence has a closer effect on customer well-being (H2a).The model fit statistics show that SRMR for the model was 0.074;   d-ULS = 11.345 Chi-square = 10824.015, and NFI = 0.658, which are at acceptable levels.

V. CONCLUSION

Organizations in the monetary administration area that depend on information-driven techniques and simulated intelligence are changing how we communicate with cash. It would be difficult to say that banks and monetary

establishments would completely rely upon computer-based intelligence and AI. In any case, these advancements are the floods representing things to come, and banks will ride on those waves. Taking on digitization and computerized reasoning (artificial intelligence) will release the force of cutting-edge information examination to battle irregularities and further develop consistency. The financial area is continually advancing, innovation is consistently being brought into banking frameworks and pioneers in the financial business are proceeding to execute momentous monetary items and administrations. There has been vital interest in late financial advancements through publicly supporting, directing, coordinating efforts, and collaborating to foster progressive financial arrangements. With the always-changing financial area new guidelines and modified financial principles have been created. Advanced banking is maybe the main change that has occurred in the monetary business over the most recent couple of years.

REFERENCES

[1] Soni Neha, Sharma EK, Singh Narotam, Kapoor Amita (2018) "Impact of Artificial Intelligence on Business." *Digital Innovations, Transformation, and Society Conference 2018 (Digits 2018).* pp:10.

[2] Azad MAK. (2016). Predicting mobile banking adoption in Bangladesh: a neural network approach. *Transnational Corporations Review,* 8(3):207–214.

[3] Bavaresco R, Silveira D, Reis E, Barbosa J, Righi R, Costa C, Moreira C (2020). Conversational agents in business: a systematic literature review and future research directions. *Computer Science Review,* 36:100239.

[4] Borges AF, Laurindo FJ, Spínola MM, Gonçalves RF, Mattos CA. (2020). The strategic use of artificial intelligence in the digital era: Systematic literature review and future research directions. *International Journal of Information Management.* 57:102225. doi: 10.1016/j.ijinfomgt.2020.102225.

[5] Caron MS. (2019). The transformative effect of AI on the banking industry. *Banking & Finance Law Review,* 34(2):169–214.

[6] Pillai, A. R., Sivagnanam, P., & Rajasekar, A. (2023). Financial Literacy As A Moderator In The Relationship Between Entrepreneurial Skills And Risk Management On Sustainable Performance.

[7] De Oliveira Santini F, Ladeira WJ, Sampaio CH, Perin MG. (2018). Online banking services: A meta-analytic review and assessment of the impact of antecedents and consequents on satisfaction. *Journal of Financial Services Marketing,* 23(3):168–178. doi: 10.1057/s41264-018-0059-4.

[8] Gallego-Gomez C, De-Pablos-Heredero C. (2002) Artificial intelligence as an enabling tool for the development of dynamic capabilities in the banking industry. *International Journal of Enterprise Information Systems (IJEIS),* 16(3):20–33. doi: 10.4018/IJEIS.2020070102.

[9] Pillai, A. R., & Sivagnanam, P. (2021). Effect of Institutional Infrastructure on Knowledge Management Process: Mediating Role of Reciprocal Benefits. *Indian Journal of Economics and Business*, *20*(2), 1521-1527.

[10] Jakšič M, Marinč M. (2019). Relationship banking and information technology: The role of artificial intelligence and FinTech. *Risk Management,* 21(1):1–18. doi: 10.1057/s41283-018-0039-y.

[11] Königstorfer F, Thalmann S. (2020). Applications of artificial intelligence in commercial banks–a research agenda for behavioral finance. *Journal of Behavioral and Experimental Finance,* 27:100352. doi: 10.1016/j.jbef.2020.100352.

[12] Pillai, A. R., & Sivagnanam, P. (2021). Effect of Institutional Infrastructure on Knowledge Management Process: Mediating Role of Reciprocal Benefits. *Indian Journal of Economics and Business*, *20*(2), 1521-1527.

[13] Rajasekar, A., & Sivagnanam, P. Financial Inclusion And Sustainable Entrepreneurship: Catalysing Women's Empowered Livelihoods In India.

[14] Alt, M.-A., Vizeli, I., & Săplăcan, Z. (2021). Banking with a chatbot-A study on technology acceptance. *Studia Universitatis Babes-Bolyai*, 66(1), 13–35

[15] Baek, H., Kim, S., & Lee, S. (2019). Effects of interactivity and usage mode on user experience in chatbot interface. *Journal of the HCI Society of Korea*, 14(1), 35–43. https://doi.org/10.17210/jhsk.2019.02.14.1.35

[16] Behera, R. K., Bala, P. K., & Ray, A. (2021). Cognitive chatbot for personalised contextual customer service: Behind the scene and beyond the hype. *Information Systems Frontiers*, 1–21.

[17] Bowden, J. L.-H. (2009). The process of customer engagement: A conceptual framework. *Journal of Marketing Theory and Practice*, 17(1), 63–74.

[18] Wu, H.-C.; Cheng, C.-C.; Hussein, A.S. (2019). What drives experiential loyalty towards the banks? The case of Islamic banks in Indonesia. *Int. J. Bank Mark*, *37*, 595–620.

[19] Thakur, R. What keeps Islamic mobile banking customers loyal? *Int. J. Islam. Bank Mark.* 2014, *32*, 628–646.

[20] Hu T., Xie C. (2016). Competition and bank risk-taking: The mediating role of innovation for Chinese banking industry. *International Journal of Applied Decision Sciences*, 9(2), 139–155.

[21] Kuzmenko O. V., Ovcharenko V. O. (2018). Assessing the impact of innovation technologies on the market of banking services in Ukraine. *Business Inform*, 2(481), 121–126.

[22] Schepman, A., & Rodway, P. (2020). Initial validation of the general attitudes towards Artificial Intelligence Scale. Computers in Human Behavior Reports, 1.

[23] Qureshi, Israr, Fang, Yulin, Ramsey, Elaine, McCole, Patrick, Ibbotson, Patrick, & Compeau, Deborah. (2009). Understanding online customer repurchasing intention and the mediating role of trust - an empirical investigation in two developed countries. European Journal of Information Systems, 18(3), 205-222. .

[24] Kinderman P, Schwannauer M, Pontin E, Tai S. The development and validation of a general measure of well-being: the BBC well-being scale. *Qual Life Res* 2011;20:1035–42.

[25] Alegre H, Baptista JM, Cabrera E, Jr, Cubillo F, Duarte P, Hirner W, Merkel W, Parena R. (2006). *Performance Indicators for Water Supply Services.* 2. IWA Publishing; London, UK.