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An Empirical Investigation on Linkages Between Robotics Process Automation and Customer Satisfaction

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Abstract

In the age of technology, it is quite important to understand the role of various development on some of the crucial measures of a successful business enterprise. Customer satisfaction is one of the concepts which must be identified and regularly tracked by every business to ensure smooth and faster growth in business. Robotics is wonderful innovation which enable banking organizations to serve its customers with hassle free manner. It is useful in many account, finance and traditional functions of enterprise management. In this study, it has been attempted to explore and analyse the interlinkages of Robotics process automation and customer satisfaction by empirical methods.

Keywords: Robotics, Customer satisfaction, Customer Delight, Empirical, Banking

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Introduction

Understanding Robotic Process Automation

Automating rule-based, repetitive operations that have historically been carried out by people is the goal of the technology known as robotic process automation (RPA), which makes use of software robots, also known as "bots." Robotic process automation bots are able to interface with digital systems in order to perform a variety of tasks, including data entry, transaction processing, and providing responses to frequently asked questions from customers. Robotic process automation (RPA) improves efficiency and accuracy at the same time that it reduces the need for manual intervention by imitating human interactions with applications and systems. Because it enables organizations to achieve significant cost savings, boosts productivity, and guarantees consistency in procedures, robotic process automation (RPA) is especially valuable for businesses.

Meaning and Components of Customer Satisfaction

Customer satisfaction is the extent to which consumers find a company's goods, services, and general experience beneficial and pleasing one. It is a vital components of consumer loyalty and corporate performance. Product quality, service quality, price, and the emotional link consumers have with the brand. These combinedly define key elements of customer happiness (Anderson, Fornell, & Lehmann, 1994). Product quality is the performance and features of the good that either meet or surpass consumer expectations. Service quality is the assistance and attention the business offers, together with dependability, empathy, and responsiveness. Another important consideration is price, which shows the seeming value for money; consumers search for goods and services that strike a mix between cost and advantages (Zeithaml, 1988). Customer encounters and brand engagements help to shape the emotional connection, therefore promoting loyalty and preference (Hallowell, 1996). Positive word-of-mouth, repeat business, and lower attrition rates follow from high degrees of customer satisfaction. Using measures like

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the Net Promoter Score (NPS) and Customer Satisfaction Score (CSAT), companies routinely gauge customer satisfaction by means of surveys and feedback platforms (Reichheld, 2003). Maintaining competitive advantage and reaching long-term corporate success depend on a knowledge of and ability to raise consumer satisfaction. The following diagram can be used to show the various components of Customer satisfaction:

Product quality refers to how well a product meets or exceeds customer expectations in terms of its features and performance. Service Quality given by the organization, including how quickly they respond, how sympathetic they are, and how dependable they are; this is service quality. Value for money, or price, is the result of weighing the pros and cons. Feelings of connection developed between a consumer and a brand as a result of shared experiences and interactions. As shown by the central circle in the diagram, these components work together to impact overall customer happiness.

Review of Literature:

Theoretical backgrounds on customer satisfaction

Customer satisfaction is a crucial concept in marketing and management, which involves several theoretical viewpoints that seek to comprehend its factors and consequences. This literature review examines the fundamental theoretical frameworks that have influenced the examination of customer satisfaction, such as the Expectation-Disconfirmation Theory, Equity Theory, and the SERVQUAL model.

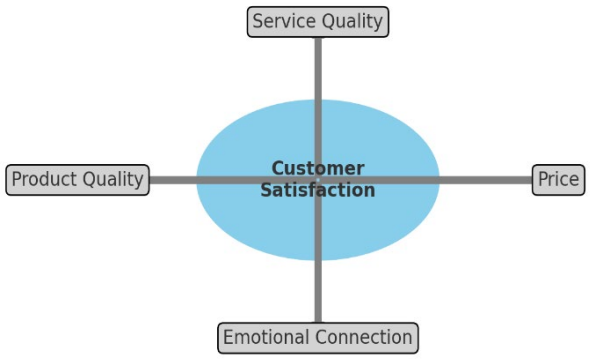

Figure 1: Components of Customer Satisfaction
Source: Researcher self-designed diagram on customer satisfaction and its components

Expectation-Disconfirmation Theory

The Expectation-Disconfirmation Theory, proposed by Oliver (1980), is a highly significant conceptual framework in the field of customer satisfaction research. Based on this hypothesis, consumer satisfaction is influenced by the difference between initial expectations and the actual outcome. Positive disconfirmation happens when a product or service surpasses expectations, resulting in increased satisfaction. On the other hand, if performance does not meet expectations, negative disconfirmation occurs, leading to discontent (Oliver, 1980). This approach emphasizes the significance of effectively handling client expectations and consistently providing high-quality products or services to improve customer satisfaction (Figure 1).

Equity Theory

The Equity Theory, introduced by Adams (1965), provides an alternative viewpoint on customer satisfaction, emphasizing the perception of fairness and justice by customers in their transactions. According to this theory, satisfaction is obtained by evaluating the perceived equilibrium between the inputs (such as time, effort, and money) that a customer puts in and the outcomes (such as benefits and rewards) they receive. Customers who believe they are receiving equitable value in comparison to what they contribute are more likely to experience satisfaction. On the other hand, when people feel that things are not fair or equal, they may become dissatisfied and have negative intentions to behave in a way that reflects their unhappiness, such as complaining or moving to a different option (Adams, 1965; Homburg & Giering, 2001).

SERVQUAL Model

The SERVQUAL model developed by Parasuraman, Zeithaml, and Berry (1988), provides a comprehensive structure for evaluating service quality and its influence on customer satisfaction. This approach categorizes service quality into five distinct dimensions: tangibles, reliability, responsiveness, assurance, and empathy. As per the SERVQUAL model, customer satisfaction is affected by the difference between customer expectations and their perceptions of the actual performance of the service in many aspects. By quantifying and resolving these discrepancies, organizations can improve the calibre of their services and, as a result, increase consumer contentment (Parasuraman, Zeithaml, & Berry, 1988).

Cognitive-Affective Model

The Cognitive-Affective Model posits that customer satisfaction is a multi-dimensional construct influenced by both cognitive and emotional responses. According to this model, cognitive evaluations (e.g., perceptions of quality and value) and affective responses (e.g., feelings of pleasure or displeasure) jointly determine overall satisfaction (Mano & Oliver, 1993). This model underscores the importance of addressing both rational and emotional aspects of the customer experience to foster satisfaction and loyalty.

Attribution Theory

Attribution Theory, when applied to customer satisfaction, analyzes how customers attribute the sources of their contentment or dissatisfaction. Based on this idea, customers construct attributions regarding the causes of product or service outcomes, which can be either internal variables (such as their own efforts) or external factors (such as the company's performance). These attributions have an impact on their degrees of satisfaction and subsequent behaviors. For instance, when customers ascribe a favorable experience to the company's endeavors, they are more like to feel content and demonstrate loyalty (Weiner, 2000).

Customer Satisfaction and Robotics process Automation in Banks: A brief Review

Robotic Process Automation (RPA) is transforming the banking industry by increasing operating efficiency, lowering expenses, and promoting client happiness. This concise analysis assesses the influence of Robotic Process Automation (RPA) on customer satisfaction in the banking sector, based on recent research and theoretical perspectives. RPA entails the utilization of software robots to mechanize mundane and repetitive actions that were conventionally executed by human personnel. Within the banking industry, Robotic Process Automation (RPA) is utilized to automate various tasks such as account opening, transaction processing, compliance management and reporting, and client query handling through the use of chatbots (Aguirre & Rodriguez, 2017). By optimizing these activities, banks can provide expedited and more dependable services, directly influencing consumer contentment. A key advantage of using Robotic Process Automation (RPA) in the banking sector is the significant decrease in the time required to process a wide range of services. For instance, activities like loan approvals, which previously required many days or weeks, can now be accomplished within a few hours using RPA.

The speed and efficiency greatly improve the customer experience, since clients value the timely delivery of services (Huang & Rust, 2018). Moreover, RPA diminishes the probability of human errors in the processing of transactions, resulting in enhanced precision and dependability, which are pivotal elements in ensuring customer satisfaction (Asatiani & Penttinen, 2016). RPA enhances customer connection by leveraging chatbots and virtual assistants. These tools offer round-the-clock assistance, promptly resolving customer concerns and problems, thereby improving the entire customer experience.

The prompt availability and reliable performance of these automated systems guarantee that customers perceive themselves as appreciated and assisted (Van der Aalst, Bichler, & Heinzl, 2018). Furthermore, through the automation of monotonous operations, Robotic Process Automation (RPA) enables bank personnel to dedicate their attention to more intricate and beneficial endeavors, such as providing tailored client service and offering financial guidance. This transition not only enhances the overall well-being and motivation of the employees but also enhances the level of service provided, resulting in increased levels of customer satisfaction (Lacity & Willcocks, 2016). To summarize, RPA is a revolutionary technology in the banking industry that greatly improves client happiness by enhancing service speed, precision, and accessibility. As banks increasingly incorporate Robotic Process Automation (RPA) into their operations, their primary goal of enhancing customer experiences is expected to result in long-term enhancements in customer satisfaction.

Past researches clearly offer insight that there is a lack of research on the long-term effects of robotic process automation (RPA) on customer loyalty and the integration of RPA with other advanced technologies, such as artificial intelligence and machine learning. This is despite the fact that RPA has substantial benefits in terms of improving operational efficiency and customer satisfaction in the banking industry. It is necessary to conduct additional research in order to investigate these areas and the potential they have to revolutionize the customer experience in the banking industry. Based on in-depth review and gaps in literature, It has been framed following set of hypotheses:

H1:0 Robotics intervention doesn't contribute to customer ease.

H1:1 Robotics intervention contributes to customer ease.

Table 1: Reliability of Scale

Cronbach's Alpha	*Number of Items*
0.76	5

Chronbach Alpha value 0.76 shows that scale to measure RPA and Customer Satisfaction is reliable one.

H2:0 Robotics Process Automation (RPA) is not linked to customer relationship management.

H2:1 Robotics Process Automation (RPA) is linked to customer relationship management.

H3:0 Customer satisfaction does not influence from robotic interventions.

H3:1 Customer satisfaction influences from robotic interventions.

Objectives of the Study

1) To explore various dimensions prominent under system of robotics and customer satisfaction.

2) To analyse the linkages between robotics process automation and customer satisfaction.

Research Method

Descriptive design adopted to know the influence and linkages of RPA with customer satisfaction. Primary data has been collected based on a newly designed scale which caters content for RPA and Customer satisfaction. Sample Data of 394 has been analysed which includes customers of different Indian banks including PSU banks, commercial and private banks. Reliability and validity of scale has been ensured for further arriving on any discussion and research outcomes. Reliability is 0.76 and content validity has been ensured through expert from banking technologies and top cadre of the banks.

Data Analysis and Interpretations

To get a proper answer of major research questions like Whether robotics intervention really contribute to customer ease which leads to satisfaction? Is RPA related to CRM? and Whether customer satisfaction influences from RPA interventions. Following statistical testing were performed (Tables 1-4).

On summarising the Table 5, 6 and 7, it can be clearly observed that both the hypotheses were rejected as P value is below to the established significance value. Hence, the alternative hypotheses were accepted to further explain the findings of this research.

Findings & Discussion

Present study statistically observed that Robotics intervention contributes to customer ease. It denotes that customer satisfaction is closely related with robotics and its automated features. It further analyses that Robotics Process Automation (RPA) is linked to customer relationship management. It means that major Indian banks are utilising RPA to manage their CRM activities. In the third hypothesis, it is observed that Customer satisfaction influences from robotic interventions.

Key findings of this study are strongly supported by other researchers like Tung & Au (2018) and Etemad-Sajadi & Sturman (2022) who have highlighted the relevance and connection of robotics on increasing the customer experiences. Robotics Process Automation is also helpful in reducing operational challenges faced by majority of the banks (Vijai et al.,2020). From bankers' point of view, RPA is one stop solution which reduces cost, time and wastages incurred by banking system in day-to-day operations.

In this age of emerging technologies, these RPA tools are stronger than traditional time of banking operations so both service providers and customers have many strong advantages like ease of access to bank accounts to the customers. Sending alerts and checking defaulters from bank point of view. In this way, managing customer relationship is again easy with the help of robotics. It is observed in a study by Amelia et al. (2022) that front line robots are effective tool to engage and provide instant to customers. In this way, it is evident that there is a

Table 2: Item-Total Statistics

	Corrected Item-Total Correlation	*Cronbach's Alpha if Item Deleted*
bank use technologies like robotics and automation to serve Customer better .	0.57	0.71
Robotics increases the customer ease in experiencing banking services	0.55	0.72
RPA contributing in managing customer relations	0.8	0.62
Customer satisfaction does not influence from robotic interventions	0.23	0.81
bank utilizes robotics to serve customers in a timely and hassle-free manner.	0.56	0.71

Hypothesis test Result :01

Table 3: Mean and Standard value of the sample

	n	*Mean*	*Std. Deviation*	*Std. Error Mean*
Robotics increases the customer ease in experiencing banking services	394	3.65	1.18	0.06

The higher value of mean 3.65 (Closer to value 4= Agree) reflects again that RPA increases customer ease. For better outlook, it can be further tested with one sample t-test .

Table 4: One sample t-test (test value -2.5)

					95% Confidence Interval of the Difference	
	T	df	P	Mean Difference	Lower limit	Upper limit
Robotics increases the customer ease in experiencing banking services	19.32	393	<.001	1.15	1.03	1.26

In above table it is depicting that p-value of <.001 was come, which is below the significance level of 0.05. Hence, the t-test result is significant for the present data and the hypothesis that Robotics intervention doesn't contribute to customer ease was rejected. Hence, alternative one is accepted i.e Robotics intervention is one of the important interventions which contribute to customer ease.

Hypotheses -2 & 3 testing:

To test these hypotheses a linear regression was performed where these results have been observed.

Table 5: Model summary for Linear Regression

R	R^2	*Adjusted* R^2	*Standard error of the estimate*
0.58	0.33	0.33	0.8

Table 6: ANOVA

Model	*df*	*F*	*p*
Regression	2	97.54	<.001

Table 7: Coefficients of Regression

Unstandardized Coefficients		*Standardized Coefficients*			*95% confidence interval for B*	
Model	B	Beta	Standard error	T	p	lower bound	upper bound
(Constant)	1.04		0.17	6.19	<.001	0.7	1.37
RPA contributing in managing customer relations	0.4	0.42	0.04	9.74	<.001	0.32	0.48
Customer satisfaction does not influence from robotic interventions	0.3	0.29	0.04	6.64	<.001	0.21	0.39

strong connection of having advanced robots and offering customer services. Definitely, it will increase customer delight feeling and their satisfaction level over the period of time. Even , robotics has impact on sustainable practices adopted by bank (Choubey & Sharma ,2021).

Conclusions

Present work is prominently highlighting the relevance of advancements of technologies on customer satisfaction like use of Robotics Process Automation. The discussions clearly explore that banking and other organisations need to focus on improving the adoption of new technologies which assist customers on manifold ways. There is a further scope to conduct qualitative study specially checking the grounded reality based on modern exposure on customer of robotics and related technologies. Findings of this study can be effectively utilised by banking and other enterprises to improve their CRM processes as well as approaches to manage the customer experiences. This study is reference material for policy makers and banking professionals who can design the customer satisfaction

and relationship program at banking as well as different kinds of business. This work emphasises on blending the robotics to improve the overall customer happiness and level of satisfaction by the banking organisations.

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