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Artificial Intelligence (AI) Enabled CRM Capabilities in the Era of Health Digitalization and Customer Satisfaction with the Serial Mediation of Customer Service Flexibility and Service Optimization

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Abstract

Artificial intelligence (AI) enabled customer relationship management (CRM) technologies are critical for increasing client satisfaction in the modern era of digitalization. They customize experiences, optimize processes, and offer predictive analytics for proactive service. Customers benefit from 24/7 support, which provides fast help. Data-driven insights boost strategy, whereas improved communication and scalability assure continuous service quality. Overall, AI CRM promotes strong customer interactions and long-term profitability. The objective of this research to investigate indispensable research question of what is the indirect impact of AI CRM on customer satisfaction with the mediation of customer service flexibility and service optimization by resource-based view theory. Philosophically, this research belongs post-positivist framework, with a deductive approach as the casual association among research variables are investigating by primary data through survey method by utilizing time-lagged design in the healthcare sector of Pakistan. The sample of this research is collected form purposefully selected 15 hospitals of different operating in three larger metropolitan cities of Punjab, Pakistan. This research utilized contemporary data utilized and analysis procedure. Data analysis is done by utilizing Smart PLS. This research found that AI CRM elevate the customer satisfaction with the mediation of customer service flexibility and service optimization. The association between AI CRM and company customer satisfaction is also examined. When contemplating the practical implications, managers and policymakers need to take into account the foundational structure to foster their customers.

Keywords: AI Enabled CRM, Health Digitalization, Customer Service Flexibility, Service Optimization, Customer Satisfaction.

1. Introduction

Artificial intelligence (AI) is now a revolutionary technology` that has touched almost all fields and the use of this technology in customer relationship management (CRM) in the healthcare sector is not an exception. Health care CRM with the help of AI is the utilization of complex mathematical models and artificial intelligence in order to enhance the processes of patient relationship management, communication and services (Aldoseri, Al-Khalifa, & Hamouda, 2023). This integration is not only to achieve the optimization of the value of the operational enhancement but also to enhance the patient experience. AI in CRM is the perfect solution for healthcare systems all over the world as they are under pressure to improve the outcomes of patients' treatment and reduce the expenses simultaneously (Leone et al., 2021). Various artificial intelligence technologies have grown very fast in the last few decades with improved development (Lee & Yoon, 2021). First, AI was concerned with the application of rules and simple data processing. However, with the introduction of machine learning and deep learning AI has undergone a drastic change in terms of how it can handle large data sets and learn from them. In healthcare, AI applications are also used for predictive analytics, natural language processing, and robotic process automation (Kumar et al., 2023). These technologies allow the health care providers to process the patient data better, to

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anticipate the health problems and to perform the repetitive tasks, thus, sparing the time for the health care professionals to attend the patients. Thus, AI is being recognized as a valuable enabler of CRM strategies in healthcare.

AI in healthcare CRM has experienced tremendous advancement globally. Some of the developed countries such as United States, United Kingdom and Canada have adopted different AI driven CRM solutions that have enhanced patient care (Ariza-Montes et al., 2022; Syed Mohamad et al., 2023). For example, there are cases of the use of AI in such applications as chatbots for responding to patient inquiries, appointment booking, and availing of health information, which has led to shorter waiting times for services. Also, the use of predictive analytics is being made to determine the patients who are most likely to require attention, so that early intervention can be made. Such successful implementations are evidence of the fact that AI not only makes processes more efficient but also improves patient experience and satisfaction.

In the context of Pakistan, the adoption of AI technologies in the context of healthcare CRM is gradually advancing due to the favorable government policies and the growing interest of investors in health technologies (Farabi et al., 2024). Currently, the Government of Pakistan has understood the importance of digital health solutions and is also attempting to create a setting for AI solutions in the healthcare sector (Zahoor et al., 2024). Some of the policies that are being developed are those that aim at increasing innovation, increasing access to health and those that aim at leveraging on technology. However, it is not entirely without some challenges. Some of the challenges include; Data privacy issues, lack of and/or poor digital resources, and lack of skilled human capital. Solving these issues is crucial to the possibility of using AI to improve CRM in healthcare.

In the context of the particular local healthcare environment in Pakistan, the application of AI to CRM has its advantages and limitations. Local healthcare providers are facing shortage of resources, inadequate technological proficiency of the staff, and resistance to change from the conventional ways. Moreover, the socio-economic differences and health inequalities across the populations of Pakistan make it challenging to apply the best-fit AI solutions (Abid et al., 2019). But there are also prospects for development, especially in the use of local solutions and cooperation with IT businesses. Measures that can be taken to improve the training and development of the workforce can ensure that the healthcare professionals are conversant with the AI tools and hence improve the quality of the interaction with the patients. Furthermore, AI solutions can be adapted to local healthcare systems and the population, including language barriers and cultural differences.

However, with the ongoing changes in the healthcare system in Pakistan, the factor of customer satisfaction has emerged as an important factor. Today's patients are much savvier than previous generations and they expect to be treated as such; they expect a unique experience (Naqvi et al., 2023)v. In this regard, CRM initiatives play a crucial role in ensuring that healthcare organisations maintain patient loyalty. AI technologies can therefore help to fill this gap by offering information on patients' behavior, choice and feedback. The application of AI also helps the healthcare providers to understand the trends of the patients and provide services that would make the patients happy and loyal to the services being offered.

2. Literature Review and Hypothiesis Development

2.1. AI CRM and Customer Servive Flexibility

AI CRM is defined as "hybrid modern system" required by firms to better analyses customers' data strategically, improve their overall business process and ensure accurate decision-making without human intervention". The integration of AI into the CRM systems may be allocated to a variety of factors, the most important of which becoming advancement in technology and evolving customer preferences (Alladi, 2024). A lot of essential factors impact the adoption and integration of AI) in CRM systems. Competitive pressure, operational efficiency, and data availability are particularly significant (Ledro, Nosella, & Vinelli, 2022b). The integration of AI into CRM systems significantly enhances customer engagement within modern business organizations (Alladi, 2024). The incorporation of AI into CRM systems has a definite an advantageous impact on customer satisfaction in modern business organizations (Peruchini, da Silva, & Teixeira, 2024). As such, the customer service flexibility is "The ability to adjust to provide tailored services" (Sofiyah et al., 2024).

In modern business doing the job atmosphere, the emergence of technological innovations are essential for fostering customer service flexibility (Alzoraiki et al., 2024). Now, Employee training and enabling is an important aspect of business strategy of today which plays a major role in customer service flexibility (Sonia & Ruby Wesley, 2024). AI-driven Customer Relationship Management (CRM) solutions are crucial in improving customer assistance adaptability in evolving business environments. Thanks to groundbreaking technology, these systems are able to customize client interactions, streamline operations, and offer instant, actionable insights (Peruchini et al., 2024). Integrating AI with CRM systems creates a more reliable and proficient customer service experience which is essential for the fast-moving corporate realm we live in (Boppana, 2023). Machine learning and predictive analytics in AI-powered CRM solutions help deliver custom- tailored customer engagement. Through analysis of client data, these systems could foresee future actions and modify interactions accordingly, leading to improved engagement and retention (Wilson, Johnson, & Brown, 2024). According to Ledro, Nosella and Vinelli (2022a), research studied that the AI CRM has positive relationship with customer service flexibility. The study explores the direct relationship between AI CRM and customer service flexibility (Alladi, 2024). Such research give evidence on the AI CRM facilitating the flexibility of customer service in the business environment of today (Peruchini et al., 2024).

Therefore, under the light of above logic this research study proposed the following hypothesis:

Hypothesis 1: *"There is positive relationship between the AI CRM and customer service flexibility".*

2.2. Customer Service Flexibility and Service Optimization

In the realm of market integration of technology is critical component which play a significant role to elevate the service

optimization (Ramachandran et al., 2023). The research documented that understanding customer needs a significant determinants of service optimization in the field of customer psychology (Wu, She, & Zhou, 2024). Ther latest study examined that the resource management is a antecedent of service optimization (Basha et al., 2024). The service optimization is defined as "The capability to improve and reposition the existing services" (Poalelungi et al., 2023). The research noted that the customer service flexibility plays a crucial role to enhance the customer retention (Brereton, Tuke, & Fernandez, 2022). The research also found that customer service flexibility has a positive effect on brand reputation (Brustel, 2024). They speculate an inverse relationship between the two above factors. The research cited favorable relations between customer service flexibility and service optimization (Aktepe & Demirci, 2024). The research also observed that customer service flexibility contributes importantly to service optimization (Vo, 2024). Finally, the research discovered that there are positive implications for service optimization when customer service flexibility holds true (Podolsky et al., 2024). Under the general umbrella of above discussion, this study proposed following hypothesis:

Hypothesis 2: *"There is positive relationship between the customer service flexibility and service optimization".*

2.3. Service Optimization and Customer Satisfaction

Service optimization raises customer satisfaction because it makes sense for most people to experience services in a way which is satisfactory or better than satisfactory the research found that as service is optimized, the customer satisfaction in business management field (Nwachukwu & Vu, 2022). However, the study points out that service optimization improves customer satisfaction. Also, the study concluded that service optimization furnishes customer satisfaction in marketing (Chen et al., 2021). In the study it was found that service optimization had an important influence on improving customer satisfaction (Beshir & Zelalem, 2020). The study found that service optimization is an important predictor of increasing customer satisfaction (Nguyen et al., 2025). The research revealed a direct association between service optimization and customer satisfaction (Selam et al., 2023). Hence under the light of above discussion this study proposes following hypothesis:

Hypothesis 3: *"There is positive relationship between service optimization and customer satisfaction".*

2.4. AI CRM and Customer Satisfaction

The degree of customer satisfaction indicates the gap between a consumer's assessment of how good an actual product is and what they expect for that same product. Customer satisfaction is significantly affected by an organization's overall level of service quality. Each of these components has a significant impact on how the consumer perceives the service they are receiving, and thus their level of happiness (Abas, Hussin, & Law, 2024). Customer expectations are intimately linked to customer satisfaction. Prior experiences, communication from one client to another, promotion, and individual needs and desires all help to shape these expectations. When businesses fulfill or surpass their customers' expectations, they significantly boost their satisfaction (Mittal et al., 2023).

For overall contentment, satisfied customers form a product or service is very important. This experience is generated by many touchpoints, including encounters with staff or product/service results. According to Wang et al. (2022), those factors shape consumer perceptions and congratulation with services or products. With tailored services based on data analysis, AI CRM in healthcare improves customer satisfaction (Alowais et al., 2023). According to Lin et al. (2021), CRM that uses AI improves customer satisfaction. AI-based customization tactics will yield outcomes similar to what the as message suggests. Chatbots and predictive analytics contribute to increased patient involvement and satisfaction (Bayyapu, 2021). This is demonstrated by AI's capacity to convert patient input and feelings into real-time data, which goes one step further in enhancing the degree of emotional interaction between ill individuals and the city. Therefore, the study's other key finding is that AI CRM and customer happiness are positively correlated (Ledro et al., 2022a). According to the research, AI CRM and customer satisfaction have a direct relationship (Sadhu et al., 2024). As seen from the above survey the research study proposed so forth hypothesis.

Hypothesis 4: *"There is positive relationship between AI CRM and customer satisfaction".*

2.5. The Relationship Between the AI CRM and Customer Satisfaction is Serial Mediated by Customer Service Flexibility and Service Optimization

Research examined that there is a positive correlation between AI CRM and the flexibility of customer service (Ledro et al., 2022a). The research used to prove a direct link of AI CRM and agility of customer service (Alladi, 2024). The AI Chabot boost customer service flexibility in modern business (Peruchini et al., 2024). There is direct relationship existing between the AI CRM and customer service flexibility in the management studies as concluded by the research (Ozay et al., 2024). According to the Li et al. (2023) study, there is positive correlation of AI CRM to customer service flexibility. The AI CRM improve the customer service agility in the organization, according to the research (Sadhu et al., 2024). The machine learning adopts the service optimization as "The ability to optimize and re-position the current offering" (Poalelungi et al., 2023). Since CSF provides the healthcare providers to meet the customers' needs in a better way, it facilitates in improvements of services. Organizations that exhibit the capability to adopt flexible service models are better positioned to manage fluctuations in demand (Dankwa-Mullan et al., 2019), and consequently promote more effective resource management and the delivery of service. Customers oriented flexibility is also mentioned (Noorbakhsh-Sabet et al., 2019). The study explored that there exists positive significant relationship between the customer service flexibility and service optimization in the area of management science (Stoffer, Widjaja, & Zacharias, 2019). New findings shed light on the positive relationship between flexibility in customer service and service design. Specifically, customer service operations flexibility is critical to solving the efficiency and effectiveness of the service delivery process and achieving total service optimization. Moreover, results from the exploratory study demonstrated a significant relationship between customer service flexibility and the improved service

optimization in health care contexts (Brewer et al., 2024). The literature posted on this day strengthens this statement, because it appears that between optimization of service and customer satisfaction is a positive correlation. And, focusing on service quality, using technology for better efficiency and process improvement, upskilling and engaging their workforce, involving consumers to provide feedback, organizations can only improve their offerings. Such efforts drive greater degrees of customer satisfaction by focusing on the key drivers of reliability, convenience, and quality of service experience (Saflor et al., 2024). It found out that the optimization of the services quality has a significant contribution to customer satisfaction (Beshir & Zelalem, 2020). The research study investigated that the service optimization is critical determinant to elevate the customer satisfaction (Nguyen et al., 2025). Reference: Selam, spoke in one of his bank branches. Reflection of the above conversation this study postulated the following hypothesis:

Hypothesis 5: *"The relationship between the AI CRM and customer satisfaction is serially mediated by customer service flexibility and service optimization".*

3. Research Methodology

Philosophically, the current research belongs under the post-positivist framework, because it applies a deductive method with time-lag design. This study establishes the AI CRM association at customer satisfaction through serial mediation of customer service flexibility and service optimization, resulting in a quantitative phenomenon. Furthermore, it suggests the variable articulate this association by establishing theoretical frameworks based on cause and effect that support the resource-based approach and stakeholder theory. This quantitative study employed a time-lagged strategy to collect data via survey questions. Furthermore, this study collected data on all variables at the individual level. Therefore, the unit of analysis is an individual. The current study performed the three surveys at three times. The current research focuses on the healthcare industry in Punjab, Pakistan. We have chosen 15 hospitals from three major metropolitan areas in Punjab, Pakistan. We requested that top management participate in the questionnaires by explicitly outlining our study objectives. We signed ethical and confidentiality agreements with these organizations and promised to keep the information secret. Subsequently, procedures for confidentiality and ethical assurance were agreed upon, and privacy guarantees were expanded. We identified 500 professionals in healthcare with the assistance of senior management from the specified branches. The research objectives were given to chosen participants, who were asked to complete questionnaires while remaining secret and anonymous. To minimize frequent technique biases, a time-lagged. Data is obtained by the distribution and collecting of questionnaires. The first employee survey (at time 1) analyzed workers' perspectives on AI-enabled CRM and service optimization. We purposely issued 500 surveys and obtained 400 completed questionnaires, yielding an 80% response rate. The second employee (at time 2) assessed the customer service flexibility. At this point, 400 self-administered questionnaires were distributed to participants in the original survey, with 320 (80%) of them returned. Finally, the third staff survey was conducted to determine customer satisfaction. We issued 320 questionnaires to persons who had participated in the last survey and received 280 (87.75%) responses. Following an initial assessment and cleansing of the data, 263 employees' surveys were found to be entirely completed.

All variables were assessed using a scale that is regularly used in literature. All variables in this study framework were evaluated using a 5-point Likert scale, ranging from strongly disagree to strongly agree. AI CRM is assessed using the scale described by Ledro et al. (2022b). This instrument has 20 components, with a Cronbach alpha value of 0.754. The customer service flexibility is measured using the scale given by Milner and Furnham (2017). There are 10 components in this instrument. The Cronbach alpha was 0.785. The service optimization is estimated by instrument which is developed by Al Bassam and Al Shawi (2011). This instrument is containing at ten items. The Cronbach alpha value is 0.780 is calculated in analysis. The last variable customer satisfaction is evaluated by 10-items scale (Danaher & Haddrell, 1996). The estimated Cronbach alpha value is 0.686 of this scale. The current study adopted a contemporary analytic technique. Prior to hypothesis testing, a first data analysis was performed to check missing values, precision, anomaly detection, and normalcy. To assess scale validity in the study framework, SPSS and Smart PLS were used. Convergent validity is examined using factor loadings and Average Variance Extracted (AVE), which demonstrate that item loads for constructs exceed 0.70 (Cheung et al., 2024). Cronbach's Alpha defines internal consistency as a number greater than 0.70. Descriptive statistics are also evaluated (Bhandari et al., 2022). In this study, Smart PLS is utilized to evaluate hypotheses.

4. Data Analysis and Results

Table 1 and Figure 1 summarizes the demographics of the participants. Of the 263 employees, 84% were male and 16% were female. In terms of age, around 20.2% of respondents were between the ages of 25 and 35, 55.52% were between the ages of 36 and 40, and 23.6% were aged 41 to 45. 14.4% had 0 to 5 years of experience, 32.3% had 5-8 years, 26.2% had 9 to 12 years, and 27% had more than 12 years of experience. The descriptive study evaluated 263 participants' self-estimated perceptions of AI-CRM in terms of healthcare service delivery. It provided a wide range of clinical advantages, including customer service and operational flexibility, as well as possible advances in clinical service delivery.

Table 1: Respondents' Characteristics.

	Profile	Frequency	Percent
Gender	Male	221	84
	Female	42	16
Age	25-35	53	20.2
	36-40	146	55.5
	41-45	62	23.6
	Above 45	2	0.8
Experience	0-5	38	14.4
	6-8	85	32.3
	9-12	69	26.2
	Above to 12	71	27.0

Table 2 and Figure 2 shows that the scales used in the current investigation are validity and reliability, with findings that fall within an acceptable range. To demonstrate dependability, the average variance extracted (AVE) should be more than 0.50, and the maximum shared variance (MSV) should be less than the AVE. Moreover, in order to verify the scale's reliability, it

is required for the composite reliability and Cronbach's alpha to surpass 0.70 and 0.60, as defined by study (Hair, Ringle, & Sarstedt, 2013). As a result, we noticed that the AVE value surpassed 0.50, whereas the MSV value was less than the AVE. Furthermore, Cronbach's alpha and composite dependability exceeded the required level for insuring reliability. For instance, the composite dependability above 0.80, although Cronbach's alpha exceeded 0.70 for all constructs.

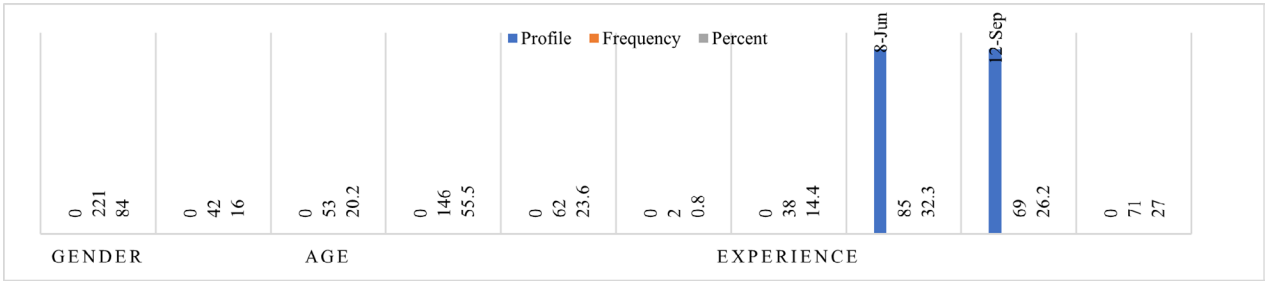

Figure 1: Respondents' Characteristics.

Table 2: Scale Validity and Reliability.

Variables	Items	Alpha	AVE	MSV	CR
AI-CRM Clinical Capabilities	20	0.754	0.69	0.50	0.85
Service Optimization	10	0.780	0.516	0.210	0.81
Customer Service Flexibility	10	0.785	0769	0.320	0.78
Customer Satisfaction	10	0.686	0.667	0.421	0.89
Notes: CR is the composite reliability, AVE presents average variance extracted, and MSV is maximum shared variance					

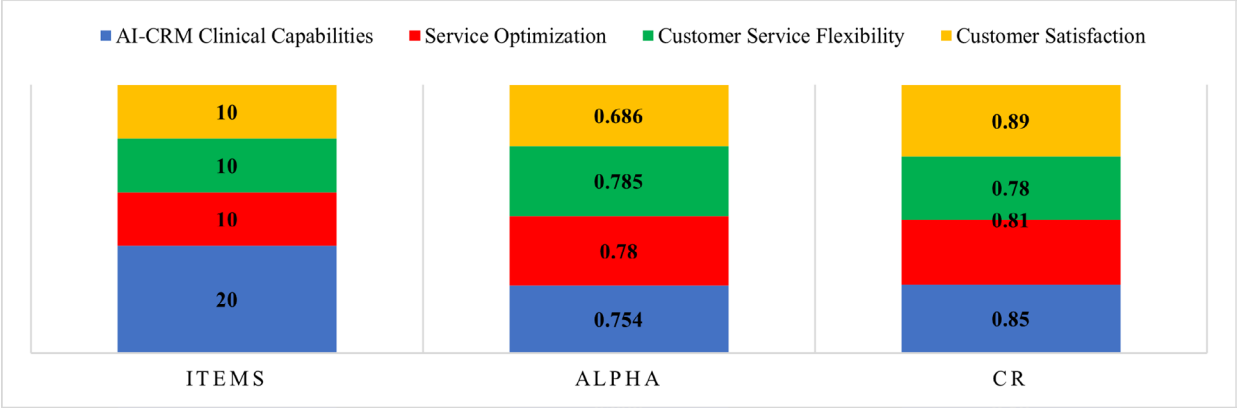

Figure 2: Scale Validity and Reliability.

Table 3 indicate the summary statistics and bivariate correlations of the research variables. The mean values reveal the data's central tendency, and the standard deviation represents its dispersion. In addition, skewness and kurtosis are used to assess data normality. For example, the mean of customer satisfaction is 3.87, with a standard deviation of 0.56, which is within a tolerable range. Similarly, the skewness and kurtosis values were discovered to fall within the usual range + 1.96, (Cruz, 2007; Mahmood et al., 2022). Furthermore, the bivariate correlation analysis indicated a moderate correlation value, indicating that there was no multicollinearity.

Table 3: Descriptive Statistics and Correlation.

	Mean	SD	Skew	Kurt	1	2	3	4
1. AI-CRM Clinical Capabilities	4.36	0.85	-0.86	0.78	1			
2.Service optimization	3.80	0.83	-1.23	1.23	0.54**	1		
3. Costumer service flexibility	4.33	0.57	-1.08	1.14	0.44**	0.57**	1	
4. Customer satisfaction	3.87	0.56	-0.96	1.22	0.26*	0.24*	0.49**	1

After testing and establishing the validity and reliability of the data, obtaining the descriptive and inferential statistics, and ensuring the fit of the model, hypothesis testing was performed (see Table 4 and Figure 3). Table 4 summarized the direct impacts of all variables included in the research investigation. AI CRM was found to have a statistically significant and positive effect on customer service flexibility of 0.540* (95% CI [0.421, 0.677]). Therefore, Hypothesis 1 is supported. We also noted

a direct positive but statistically significant effect of CSF on SO of 0.642* (95% CI [0.388, 0.896]). Thus, hypothesis 2 is validated. Furthermore, the statistically significant and positive impact of SO on CS was 0.745* (95% CI [0.506, 0.984]). Therefore, Hypothesis 3 is supported. The final direct effect of AI CRM has a statistically significant and positive effect on CS of 0.120** (95% CI [0.110, 0.192]. Thus, Hypothesis 4 is supported. In addition, we discovered that customer service flexibility and service optimization successively mediated the indirect effect of AI CRM on CS 0.258** (95% CI [0.140, 0.377]). As shown in Table 4, the direct effect of AI CRM on CS was positive but statistically significant at 0.120** (95% CI [0.110, 0.192)]. Thus, full mediation was examined, and the findings supported Hypothesis 5.

Table 4: Summary of the Direct and Indirect Effects.

	Estimate	*p*-value	95% CI	Remarks
AI-CRM → CSF	0.540**	0.03	[0.421, 0.677]	Supported (H1)
CSF → SO	0.642*	0.00	[0.388, 0.896]	Supported (H2)
SO → CS	0.745*	0.00	[0.506, 0.984]	Supported (H3)
AI-CRM → CS	0.120**	0.02	[0.110, 0.192]	Supported (H4
AI-CRM → CSF → SO → CS	0.258**	0.03	[0.140, 0.377]	Supported (H5)

Notes: * $p < 0.05$, ** $p < 0.01$, AI CRM = Artificial intelligence customer relationship management, CSF = customer service flexibility, SO = Service optimization, CS = customer satisfaction, CI = Confidence interval

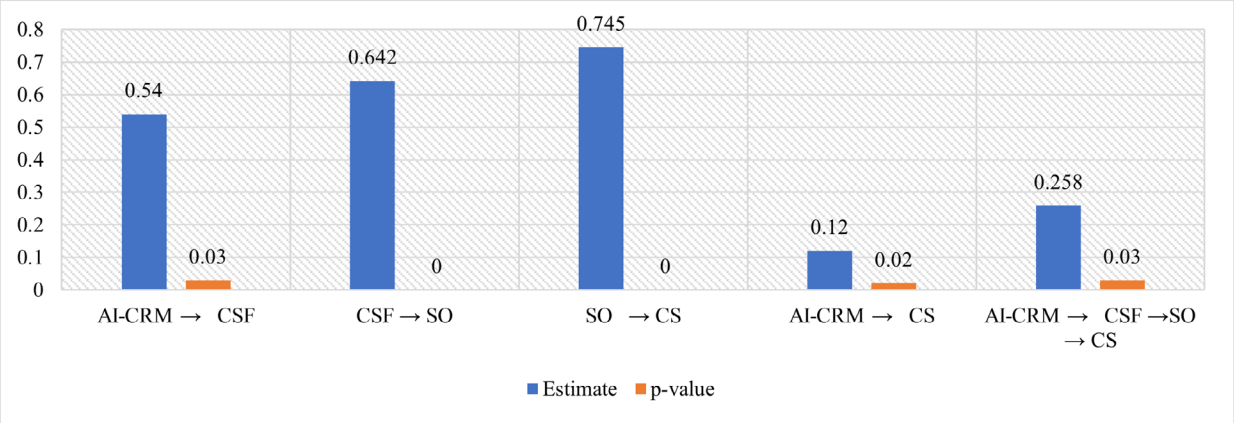

Figure 3: T-Values and P-Values.

5. Discussion and Conclusion

The relationship between AI CRM and customer satisfaction has been examined in a variety of management and organizational behavior contexts. Nonetheless, the function of the intermediary variable in this context has been overlooked, particularly in developing nations. The research contributes to the AI CRM framework in underdeveloped nations. The results illustrate AI CRM's acceptable influence on customer satisfaction in Pakistan. First, this study investigated if there is a positive association between AI CRM and customer service flexibility. This study investigated if there is a positive relationship between AI CRM and customer service flexibility. These findings are in line with the existing literature for example existence of positive correlation between AI CRM and customer service flexibility (Peruchini et al., 2024). The results of this study are positive with statistical significance.

Second, this study has assessed the direct relationship between customer service flexibility and service optimization. The Results of this study are in accordance with prior research, such as. Kumar and Singh (2020) suggest that customer service flexibility has a direct relation to service optimization. These results are statistically significant. Third, this study examined whether service optimization has a positive effect on customer satisfaction. The results of this paper are not only interesting by itself, but are also consistent with the results of others studies. For instance, Chattopadhyay (2019) has documented that there is a positive relationship between service optimization and customer satisfaction.

The findings of this study are positive and statistically significant. Fourth, this study documented that there is a positive relationship between AI CRM and customer satisfaction, and the findings of the recent study are consistent with the existing literature, for example, these researches indicated there is positive relationship between the AI CRM and customer satisfaction (Ledro et al., 2022a; Sadhu et al., 2024). The findings of this study are statistically significant. Fifthly. The current study evaluated the relationship between AI CRM and customer satisfaction, which is mediated by customer service flexibility and service optimization. The findings are consistent with the extant research; for example, the latest research concluded that relationship between AICRM and customer satisfaction is serially mediated by customer service flexibility (Selam et al., 2023). It's a statistically significant result. The research on this theme can analyze the performance of AI CRM in various domains for better understanding of domain aligned element effecting that relationship. Industries characterized by high customer engagement rates (ex-retail, hotels) can exhibit different dynamics than more transaction-oriented ones (ex-

finance, insurance). Longitudinal studies may have insights into the effect of AI CRM on customer satisfaction and loyalty over time. The present research focuses on the immediate impact of linkages, but how linkages develop over time, and ensure organizations a sustained competitive advantage. Qualitative research: Qualitative research, including customer interviews and case studies, can provide additional insight into strengths and weaknesses of AI CRM systems and how they compete against traditional CRM systems. There is also a need to consider more in the impact of future technologies like machine learning and, blockchain, AI CRM with service optimization, etc. This, along with other technologies such as AI CRM solutions, creates new service types and higher levels of consumer satisfaction. As a result, ethical elements like data privacy and algorithmic bias have been considered to guarantee that these technologies/future techs are being passed on to customers without hampering trust. But the study has major limitations. This cross-sectional design limits causal inference, as data observed in a single region may not be generalizable worldwide. Self-reporting may have introduced bias among the respondents, nor did we explore other possible mediators and moderators, such as consumer loyalty schemes or employee participation. More in-depth understanding of the impact of AI CRMs on customer satisfaction should be the focus of future studies. The model of the study tested the relationship among AI CRM, service adaptation, service improvement, and customer satisfaction. According to the study, AI CRM improves the quality, effectiveness and timeliness of services, significantly increasing the level of customer satisfaction. The study findings highlight customer service flexibility and service optimization as two major mediators of this relationship. Central to the report is a call for the sector to embrace tech innovations, up-skill employees and engage customers to better the services offered. However, some study limitations should be taken into account, such as the cross-sectional design and regional data limitations. Further on future research should focus on longitudinal impacts, industry-specific implications and ethical perspectives to better understand AI CRM impacts on customer satisfaction.

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