Navigating the Digital Landscape: A Framework Between Chatbot Marketing Efforts and Brand Loyalty

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Abstract

This research investigates the influence of Chatbot Marketing Efforts (CME) on brand loyalty, with a focus on the mediating roles of credibility, accuracy, system quality, and fulfillment quality. The study delves into the evolution of artificial intelligence in marketing, emphasizing the transformative role of AI, particularly in the rise of chatbot-based digital solutions. It addresses the need to understand how chatbot agents, along with mediating variables such as accuracy, credibility, system quality, and fulfillment quality, replicate the role of traditional service agents and impact brand loyalty. The research also aims to fill the gap in understanding the effects of chatbot marketing efforts in the Asian region, focusing specifically on Pakistan. A quantitative study was carried out, and one-shot, cross-sectional data was collected through questionnaires from a sample of 230 respondents. The target population was particularly from Lahore because it consisted of a lot of variation in terms of age and social status, increasing the authenticity of responses. Convenience sampling was used to reach out to customers who were already using chatbots. Once the data was collected, it was run through SPSS using Process Hayes Mediation Model 4. The findings of the conducted analysis supported five proposed hypotheses. These were: CME is positively associated with brand loyalty, credibility mediates the positive relationship between CME and brand loyalty, accuracy mediates the positive relationship between CME and brand loyalty, system quality mediates the positive relationship between CME and brand loyalty, and lastly, fulfillment quality mediates the positive relationship between CME and brand loyalty. These hypotheses emphasize the practical implication of the study and the potential for organizations in Pakistan to enhance brand loyalty among digitally engaged consumers by leveraging chatbot marketing strategies. Investing in the training and development of chatbot agents emerges as a crucial step to enhance their performance and improve customer interactions.

Keywords: Sustainable Food Consumption, Purchase Intention, Consumer Attitude.

Introduction

As technology evolves, so do marketing tools. With consumers spending more time online and using digital platforms, brands are increasingly focusing on digital services and solutions to reach and engage customers. This transition is driven by the need to provide better customer experiences and meet customer expectations in real time (Boyd, 2012). The use of chatbots and other virtual service agents, which can converse with clients to offer customer care, respond to inquiries, and even

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complete transactions, represents a significant advancement in this field (Davis & Johsnon, 2021). With the help of these AI-powered chatbots, brands can maintain an active online presence and deliver a consistent online experience to consumers. Improved client satisfaction and brand visibility are additional benefits of this technology. Chatbots have become an indispensable tool for organizations seeking to enhance customer service and engagement as digital marketing continues to evolve. Chatbots can answer consumer questions around the clock, eliminating the need for human participation in customer service, as opposed to traditional approaches. This significantly reduces staffing expenses and streamlines customer service while enabling marketers to interact with a broader audience (Hasan & Sadat, 2023). Brands can increase productivity while maintaining a high level of customer satisfaction by automating routine customer interactions.

The use of digital marketing has increased dramatically, especially with regard to AI-powered interactive messaging services. Brands across various industries are leveraging chatbots for customer service, marketing, and sales tasks. Because these AI-powered chatbots can handle multiple tasks simultaneously, system quality will improve, and customer engagement will increase (Dominika, 2019; Namadi, 2023). With the advancement of marketing technologies, companies now have more affordable and scalable options for customer support and assistance. Artificial Intelligence has been treated as the next industrial revolution; people believe that artificial intelligence can provide a solution to most of the problems and challenges that exist right now in the world (Nudzor, 2023; Abigail, 2023). This study has focused on the mediating impacts of chatbot accuracy, credibility, system quality, and fulfillment quality to gain a deeper understanding of how these new marketing tools affect brand loyalty. By investigating the connection between chatbot marketing initiatives and brand loyalty, this study contributes to the body of knowledge in the fields of digital and artificial intelligence research by providing insights into how companies can use AI to strengthen their relationships with their clientele. John McCarthy originally put forth the idea of "artificial intelligence" in 1956 at the Dartmouth Conference. Since then, it has evolved from a curious intellectual oddity to a widespread technical phenomenon affecting numerous businesses.

The original objective, which has come a long way over the years, was to build machines that could mirror human intelligence. These days, artificial intelligence (AI) is essential to many industries, including marketing, banking, healthcare, and transportation (Boyd et al., 2012; Ustaoglu & Yildiz, 2023). AI and other developing technologies have significantly changed marketing in the last few years (Minjee, 2020; Nudzor, 2023). Brands are using these digital services to improve their connections with clients as consumer behaviors increasingly shift toward digital platforms (Brown & Smith, 2022). The adoption of AI-based solutions has made it possible to deliver personalized experiences on a large scale. One of the most significant changes in marketing is the use of chatbot-based digital solutions. These AI-powered chatbots are becoming standard tools in customer service, helping businesses interact more successfully with clients. Chatbots are replacing traditional customer service models, which rely mostly on human agents, because they can handle a large volume of client interactions and operate around the clock (Dominika et al., 2019; Sayvaya & Phommason, 2023). This shift reflects a fundamental rethinking of how companies engage with their customers, rather than merely being a passing trend. As AI continues to develop, it has the potential to completely transform marketing strategies, enabling automation, personalization, and real-time communication. The chatbot revolution demonstrates how businesses can use AI to reduce expenses, increase customer satisfaction, and streamline customer care procedures. This change not only improves operational effectiveness but also creates new opportunities for innovative marketing plans that heavily incorporate AI technologies.

The integration of AI technologies into marketing strategies has been driven by the need for

businesses to adapt to the evolving digital landscape and meet the changing expectations of consumers. With the proliferation of digital channels and the rise of online shopping, consumers expect seamless and personalized interactions with brands across various touchpoints. AI-powered solutions, such as chatbots and recommendation engines, have emerged as valuable tools for delivering tailored experiences and engaging customers in meaningful ways (Shahzad et al., 2024; Strien & Koenders, 2012). By harnessing the power of AI, companies can analyze vast amounts of data to understand consumer preferences and behaviors, allowing them to anticipate needs, personalize messaging, and optimize marketing campaigns. Moreover, the COVID-19 pandemic has accelerated the adoption of AI technologies in marketing as businesses seek to navigate the challenges posed by the global crisis. With social distancing measures and restrictions on in-person interactions, digital channels have become even more critical for maintaining connections with customers. AI-driven tools have played a crucial role in enabling remote engagement, facilitating online transactions, and providing timely support to customers (Iqbal & Abbas, 2024; Hydari et al., 2019; Cizakca, 2024; Karim & Said, 2024). As the pandemic continues to reshape consumer behaviors and market dynamics, the role of AI in marketing is expected to expand further, driving innovation and shaping the future of customer engagement. In contemporary marketing efforts, there is a growing emphasis on the exploration of chatbot agents as a distinctive and attractive approach for to elevating customer satisfaction, mirroring the role of Accuracy and quality. Minjee et al. (2019) shed light on the potential of these chatbot agents to exert an important influence on the results of service exchanges. However, there exists a need to delve deeper into understanding how these agents can consistently deliver valuable information to customers and arrange engaging and pleasurable shopping experiences while also considering the mediating roles of accuracy, credibility, system quality, and fulfillment quality. This study seeks to address the primary question of how chatbot agents, with these mediating variables at play, can effectively replicate the role of traditional service agents and enhance the overall quality of service interactions in the context of modern marketing and what impact does it create on brand loyalty (Vrontis, 2007; Ibrahim & Rasheed, 2024). Furthermore, the gap to investigate the influence of chatbot marketing efforts is still evident in the Asian region (Chen, 2021; Rath, 2024). Thus, we aim to explore this untapped area to bridge the gap and investigate the effects of chatbot marketing efforts in Pakistan.

Firstly, to effectively communicate with their audience, brands have had to shift towards digital services as consumers increasingly immerse themselves in digital environments (Asim et al., 2021; Asif et al., 2023; Aydemir, 2024). The objective of the study is to determine how brand loyalty is influenced by chatbot marketing, a crucial AI-driven tool in digital marketing, particularly in an environment where customer loyalty may fluctuate. Secondly, the research delves into the specifics of accuracy and trust within the framework of AI-powered chatbot marketing. Building trust with clients has always been essential for successful business-consumer relationships (Iqbal & Abbas, 2024). Concerns about the reliability of information provided by AI-driven agents arise as chatbots are utilized in more consumer interactions (Daniela et al., 2021; Asim et al., 2021; Quader, 2024). Therefore, the study addresses the second issue, seeking to understand how accuracy and credibility serve as mediators in the relationship between chatbot marketing and brand loyalty. Furthermore, within the context of chatbot marketing and its impact on brand loyalty, this research also examines the critical aspects of system quality and fulfillment quality. Consumers expect seamless and efficient interactions with chatbots, similar to those they would experience with traditional offline service personnel, in addition to accurate information and credibility (Ali et al., 2020; Elahi et al., 2021; Ullah & Ali, 2024).

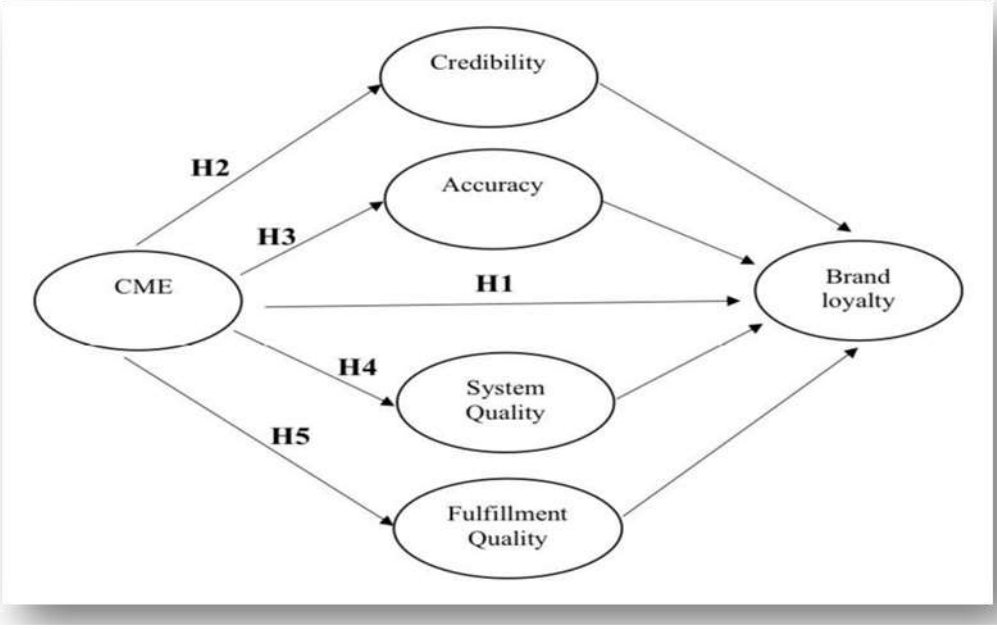
Brand loyalty may now be effectively increased through chatbot marketing, and system quality,

fulfillment quality, accuracy, and credibility are all important components of this process. Marketers may cultivate a more devoted consumer base and improve customer satisfaction by utilizing these mediating factors. Additionally, chatbots are essential to providing a customized consumer experience. Chatbots may provide personalized recommendations and promotions by utilizing customer data. This not only improves the customer experience but also reinforces the emotional bond between the customer and the company. Customer loyalty can be greatly increased by providing a personalized touch, which helps them feel appreciated and understood. Another method of enhancing brand loyalty is through chatbots that provide constant interaction. Chatbots are capable of engaging in proactive client communication by offering pertinent offers, promotions, or information. This proactive strategy promotes repeat business and client loyalty by keeping the brand fresh in the minds of the target audience.

Additionally, chatbots can oversee loyalty programs, giving users easy access to track their points or prizes and strengthening their bond with the company.

In conclusion, brand loyalty can be greatly increased by chatbot marketing when it is optimized for accuracy, trustworthiness, system quality, and fulfillment quality. Marketers may build enduring relationships with consumers by concentrating on these essential components, which will eventually increase brand loyalty and ensure long-term commercial success. Figure 1 shows all the proposed relationships of variables studied during this research.

Figure 1: Theoretical Framework



Literature Review and Hypothesis Development

Chatbot Marketing Efforts and Brand Loyalty

Brand loyalty serves as a cornerstone of brand success in contemporary marketing landscapes, representing a crucial determinant of consumer behavior and long-term business viability. The significance of brand loyalty lies in its ability to foster repeat purchases, drive positive word-of-

mouth, and ultimately sustain competitive advantage in crowded marketplaces. Chatbots recognized as versatile tools in modern marketing strategies, have garnered attention for their potential to enhance brand loyalty through personalized interactions, instant customer support, and round-the-clock availability (Sashi, 2020).

Recent research has shed light on the instrumental role played by chatbot marketing efforts in influencing brand loyalty dynamics. Chen (2021) highlights how effective chatbot marketing initiatives can positively impact brand loyalty by enriching customer engagement and satisfaction levels. This assertion is further supported by empirical evidence indicating that chatbots can enhance customer satisfaction through their ability to provide prompt responses and support (Chen et al., 2019; Ali et al., 2020). The consequential effect of heightened customer satisfaction on brand loyalty is well-established, with satisfied customers demonstrating a greater propensity to remain loyal to a brand over time (Anderson & Wilson, 2020; Khan et al., 2020). Moreover, the proliferation of AI-powered chatbots has introduced new dimensions to the discourse surrounding chatbot marketing efforts and brand loyalty. Scholars have increasingly turned their attention to investigating the impact of AI-driven chatbots on customer-brand relationships, recognizing their potential to revolutionize interaction dynamics and enhance brand loyalty (Yasir et al., 2021). In particular, the integration of AI technologies enables chatbots to deliver more sophisticated and tailored experiences, catering to individual preferences and evolving customer needs. The study by Mukhtar et al. (2021) contributes to this discourse by elucidating the multifaceted functions of chatbots in shaping service quality and customer experiences. By categorizing chatbots' objectives into distinct domains, such as service performance enhancement and customer expectation fulfillment, the study provides a theoretical framework for analyzing chatbots' influence on brand loyalty. Functions such as interaction, entertainment, problem-solving, trendiness, and customization emerge as instrumental in driving positive brand perceptions and fostering long-term customer relationships (Verhoef, 2015).

Thus, these studies helped us formulate our resonating hypothesis:

Hypothesis 1: Chatbot Marketing Efforts are associated with brand loyalty.

Chatbot Marketing Efforts and Brand Loyalty: A Mediated Process by Credibility

The integration of chatbot marketing efforts, characterized by personalized interactions, instant customer support, and 24/7 availability, has emerged as a potent strategy for enhancing brand loyalty (Chen et al., 2019). The seamless integration of chatbots into customer service ecosystems offers unparalleled convenience and efficiency, empowering businesses to engage with consumers in real time and address their needs promptly. This heightened level of customer engagement and satisfaction lays the groundwork for cultivating enduring relationships between brands and their loyal customers (Ayse, 2020). However, the efficacy of chatbot marketing efforts in driving brand loyalty is contingent upon the perceived credibility of these digital assistants. Credibility, defined by attributes such as trustworthiness, expertise, and reliability, serves as a critical mediator in shaping consumers' perceptions and responses to chatbot interactions (Rafique et al., 2020). As consumers engage with chatbots to seek information, resolve queries, or make purchasing decisions, the credibility of the information and assistance provided by these digital agents becomes paramount in shaping their overall brand perceptions and loyalty.

Recent research in the retail sector, exemplified by the study conducted by Jones and Brown (2021), provides valuable insights into the nuanced interplay between chatbot e-services and customer perceptions within specific market contexts. Their findings underscore the pivotal role played by various dimensions of chatbot interactions, including interaction quality, trendiness, and

problem-solving capabilities, in enhancing customer satisfaction and loyalty. Moreover, the study highlights the indispensable contribution of communication credibility in shaping customers' overall satisfaction levels, emphasizing the importance of providing accurate, reliable, and transparent information through chatbot-mediated interactions.
Thus, these studies helped us formulate our resonating hypothesis:
Hypothesis 2: Credibility mediates the relationship between Chat bot marketing efforts and brand loyalty.

Chatbot Marketing Efforts and Brand Loyalty: A Mediated Process by Accuracy
Chatbot marketing efforts have emerged as a multifaceted strategy for brands to engage with consumers, offering personalized interactions, instant customer support, and targeted content delivery. Research has demonstrated the positive impact of these efforts on brand loyalty, highlighting the role of chatbots in enhancing the connection between customers and brands (Clark et al., 2020; Oviedo et al., 2021). Through their ability to provide convenience, speed, and tailored experiences, chatbots contribute to strengthening brand-consumer relationships and fostering loyalty over time. Central to the effectiveness of chatbot interactions is the concept of accuracy, which serves as a pivotal mediating factor in shaping the relationship between chatbot marketing efforts and brand loyalty (Thøgersen et al., 2020). Accuracy, defined by the correctness and reliability of the information provided by chatbots, is intrinsically linked to the trustworthiness and credibility of these digital agents as sources of information. As users engage with chatbots to seek information, resolve queries, or make purchasing decisions, the accuracy of the responses and solutions provided significantly influences their perceptions and attitudes toward the technology (Vrontis, 2007).
User expectations for chatbot accuracy are high, with customers expecting chatbots to deliver accurate responses and effective solutions to their inquiries. The perceived accuracy of chatbot interactions plays a crucial role in shaping users' overall experience with the technology, directly impacting their satisfaction levels and trust in the brand (Qaiser et al., 2021). When chatbots consistently deliver accurate and reliable information, users are more likely to perceive them as trustworthy sources of assistance, leading to greater satisfaction and loyalty toward the brand. The influence of accuracy extends beyond individual interactions to encompass broader dimensions of brand-consumer relationships. As users interact with chatbots across various touchpoints, the cumulative effect of accurate and reliable assistance contributes to building a positive brand image and fostering long-term loyalty among customers. Brands that prioritize accuracy in chatbot interactions demonstrate a commitment to providing high-quality customer experiences, thereby enhancing their reputation and strengthening brand-consumer bonds over time (Eunju, 2020).
Thus, these studies helped us formulate our resonating hypothesis:
Hypothesis 3: Accuracy mediates the relationship between chatbot marketing efforts and brand loyalty.

Chatbot Marketing Efforts and Brand Loyalty: A Mediated Process by System Quality
Chatbot marketing efforts encompass a spectrum of strategies aimed at enhancing customer engagement and fostering brand loyalty, including personalized interactions, real-time customer support, and tailored content delivery. Extensive research has corroborated the positive influence of these efforts on brand loyalty, highlighting the pivotal role of chatbots in offering convenience, accessibility, and personalized experiences that strengthen the bond between customers and brands (Chen et al., 2019). Central to the effectiveness of chatbot interactions is the concept of system

quality, which serves as a crucial mediating factor in shaping the relationship between chatbot marketing efforts and brand loyalty (Asif et al., 2017). System quality, characterized by factors such as reliability, responsiveness, and ease of use, plays a fundamental role in determining the effectiveness and reliability of chatbot systems in delivering a positive user experience. Reliability stands out as a key dimension of system quality, reflecting the system's ability to perform consistently and predictably under various conditions. Users rely on chatbots to provide accurate information, timely responses, and effective solutions to their inquiries, necessitating a high level of reliability to instill trust and confidence in the technology.

Moreover, responsiveness refers to the speed and agility with which the chatbot system can address user needs and queries, ensuring prompt and seamless interactions that enhance user satisfaction and engagement. Ease of use encompasses the intuitiveness and accessibility of the chatbot interface, allowing users to navigate and interact with the system effortlessly. A user-friendly interface enhances the overall user experience, reducing friction and cognitive load and fostering positive perceptions of the brand (Zafar et al., 2022).

The effectiveness and reliability of chatbot systems are pivotal in creating a positive user experience that fosters brand loyalty. When chatbots consistently deliver high-quality interactions characterized by reliability, responsiveness, and ease of use, users are more likely to perceive them as valuable assets in their interactions with the brand, leading to increased satisfaction, trust, and loyalty over time.

Thus, these studies helped us formulate our resonating hypothesis:

Hypothesis 4: System quality mediates the relationship between Chat bot marketing efforts and brand loyalty.

Chatbot Marketing Efforts and Brand Loyalty: A Mediated Process by Fulfillment Quality

As chatbots continue to ascend as indispensable tools in modern marketing strategies, their role in enhancing customer engagement and fostering brand loyalty has garnered significant attention. Chatbot marketing efforts encompass a diverse array of strategies, ranging from personalized interactions to instant customer support and targeted content delivery, all aimed at delivering seamless and tailored experiences to consumers (Chen et al., 2019). Extensive research has underscored the positive impact of these efforts on brand loyalty, highlighting the transformative potential of chatbots in strengthening the customer-brand relationship. At the heart of the efficacy of chatbot interactions lies the concept of fulfillment quality, which plays a pivotal mediating role in shaping the relationship between chatbot marketing efforts and brand loyalty. Fulfillment quality, characterized by factors such as accuracy, timeliness, and completeness in addressing customer inquiries and requests, is instrumental in meeting and exceeding customer expectations. Through their capacity to provide personalized interactions and tailored solutions, chatbots play a central role in fulfilling customer expectations, thereby enhancing overall service quality and fostering positive experiences.

By delivering satisfactory resolutions to customer inquiries and requests, chatbots contribute to the fulfillment of customer expectations, thereby enhancing overall service quality and fostering positive experiences that drive brand loyalty (Sayvaya & Phommason, 2023). The seamless and efficient handling of customer interactions by chatbots not only enhances customer satisfaction but also strengthens the bond between consumers and brands, laying the groundwork for enduring brand loyalty over time. In essence, the fulfillment quality facilitated by chatbots emerges is a key driver in cultivating enduring brand loyalty among customers. By ensuring accuracy, timeliness, and completeness in addressing customer inquiries and requests, chatbots elevate the overall

service quality delivered by brands, thereby fostering positive experiences and strengthening the emotional connection between consumers and brands. In synthesizing these insights, the following hypothesis emerges as a guiding framework for understanding the interplay between chatbot marketing efforts, fulfillment quality, and brand loyalty.

Thus, these studies helped us formulate our resonating hypothesis:

Hypothesis 5: Fulfillment quality mediates the relationship between Chat bot marketing efforts and brand loyalty.

Methodology

Procedures and Participants

Data was collected from consumers who had interacted with chatbot marketing and expressed interest in online shopping. Specifically, Lahore was chosen as the ideal target market due to its status as the second-largest city with significant commercial activity. The population of Lahore exhibits a diverse range of age groups, social statuses, and educational backgrounds, enhancing the authenticity of the responses collected. This facilitated the distribution of surveys and questionnaires through online channels, ensuring ease of access and participation for the respondents. Customers from Lahore were selected from the population through non-probability selection procedures, employing convenient sampling methods. Our target market encompassed online customers as well as all social media users. The sample size was determined to be 230 responses, calculated based on Nunn Ally's (1978) assumption of ten times the number of items in the questionnaire, resulting in a total of (23*10=230).

Additionally, for the pilot study, 30 responses were included. The questionnaire was initially distributed physically and later uploaded to Google Forms for wider circulation among respondents of all genders and age groups through various social media networks. For sample selection through online platforms, convenience sampling was utilized. This technique involved selecting customers who were easily accessible and available to respond. The questionnaire was circulated on various social media platforms, allowing customers to fill in their responses at their convenience.

Unit of analysis refers to the phenomenon that a researcher is studying and collecting data on in a research project. It is the basic entity that is being analyzed. The research targeted individuals rather than groups or organizations. These young individuals share their experiences in a better way and show adaptability to different variables. The study created fresh and authentic results this way. Research questionnaires were made available online via a link accessible to the respondents using one of the latest questionnaire tools, Google Forms. This method of data collection ensured the least interference by the researcher in this process. The entities of the respondents remained hidden to maintain confidentiality and to minimize the risk of biased responses. The majority of the participants were female (60.5%), and a small proportion were males (39.5%). Most of the respondents were between the ages of 23-27 showing (50%). With a smaller proportion in the 28-32 years old range (20%) and an even smaller number in the 18-22 years old (19%). Regarding the participants' education level, 17.5% were postgraduate, 69% were undergraduate, 9.5% from A Levels, 3.5% from O Levels, and .5% from others. In terms of household income, 67% were from 231,000- 280,000, 15% from 181,000- 230,000, .5% from 131,000- 180,000 and 17.5% from others.

Measures

Chatbot Marketing Efforts

Chatbot marketing efforts were measured using a 6-item scale that was developed by (Jiang, 2021). A sample item is 'The chatbot service agent has the knowledge to answer customer's questions.' Respondents rated their response on a 1-6 Likert-type scale ranging from strongly disagree to agree strongly.

Credibility

Credibility was measured using a 6-item scale that was developed by (Eunju, 2020). A sample item is 'The chatbot service agent is honest.' Respondents rated their response on a 1-6 Likert-type scale ranging from strongly disagree to agree strongly.

Accuracy

Accuracy was measured using a 6-item scale that was developed by (Johnson, 2018). A sample item is 'Communication with chat bot service agent is accurate.' Respondents rated their response on a 1-6 Likert-type scale ranging from strongly disagree to agree strongly.

System Quality

System Quality was measured using a 6-item scale that was developed by (Eunju, 2020). A sample item is 'I trust the website to keep my information safe.' Respondents rated their response on a 1-6 Likert-type scale ranging from strongly disagree to agree strongly.

Fulfillment Quality

Fulfillment Quality was measured using a 6-item scale that was developed by (Anderson, 2000). A sample item is 'The information available on the website is the one I'm looking for.' Respondents rated their response on a 1-6 Likert-type scale ranging from strongly disagree to agree strongly.

Brand Loyalty

Brand Loyalty was measured using a 6-item scale that was developed by (Severi, 2013). A sample item is 'I regularly refer this particular product/brand through social media.' Respondents rated their response on a 1-6 Likert-type scale ranging from strongly disagree to agree strongly.

Results

Data Analysis Approach

The empirical data were statistically analyzed using a two-step procedure performed by researchers. First, descriptive analysis, correlational analysis, reliability, and validity of the measure were examined by using SPSS. Second, our proposed mediation model (hypotheses) was tested using Hayes's techniques. Process macros are the best and recommended technique to test the indirect and conditional effects.

Measurement Validation

In this study, Cronbach's alpha was used to assess the reliability and internal consistency among the items of each construct, including chatbot Marketing Efforts, Credibility, Accuracy, System Quality, Fulfillment Quality, and Brand Loyalty. Cronbach (1951) suggests that a scale's items should have a value that is either equal to or greater than 0.7 in order to ensure the reliability and internal consistency of the constructs. Furthermore, Taylor (2017) advocates that an alpha value,

which is either equal to 0.90 or greater, can be classified as "excellent," and an alpha value close to 0.80 is "very good." An alpha value of approximately 0.70 is " acceptable."

Table 1: Reliability of Scales

Variables	No. of items	Cronbach's α value	Level of Reliability
CME	9	0.948	Excellent
Credibility	3	0.897	Good
Accuracy	3	0.903	Excellent
System Quality	3	0.800	Good
Fulfillment Quality	2	0.769	Acceptable
Brand Loyalty	3	0.973	Excellent

Table 1 presents reliability of the six scales in this study. First scale, health CME, has eleven items and an alpha value of 0.94, which depicts an "excellent" reliability. The second scale, credibility, has three items and a value of 0.89 as alpha, meaning a "good" reliability level. Moreover, accuracy, has three items with an alpha value of 0.90, which also means "excellent" reliability. Moving on to fourth scale, system quality, has three items with alpha value of 0.80, indicating "good" reliability level. The fifth scale, fulfillment quality, has two items and an alpha value of 0.76, indicating an "acceptable" reliability among items. Finally, the sixth scale, brand loyalty, has four item scales and an alpha value of 0.97 indicating an "excellent" reliability. Overall, the Cronbach's alpha values for all six scales fall within the excellent range, representing a satisfactory level of reliability.

Correlation Matrix

Table 2 shows the correlation matrix of variables studied in this research, which gives an understanding of the relationships between them. The table displays the Pearson correlation coefficient (r) among the six variables below. A perfect positive correlation is shown by 1, whereas -1 is a perfect negative correlation, and 0 means no correlation (Pearson, 1895).

Table 2: Correlation Matrix of Variables

Correlations						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
1. CME	1					
2. Credibility	.515**	1				
3. Accuracy	.412**	.408**	1			
4. System Quality	.408**	.374**	.477**	1		
5. Fulfillment Quality	.337**	.421**	.496**	.453**	1	
6. Brand Loyalty	.416**	.435**	.395**	.501**	.536**	1

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

Correlation analysis serves as a pivotal tool in the realm of research, providing a means to validate proposed relationships between variables. The results of the correlation analysis conducted in our study offer valuable insights into the nature and strength of associations among the variables under investigation. Notably, our findings reveal a positive and moderate relationship among the variables, underscoring the interconnectedness of these constructs. Of particular significance is the robust and statistically significant positive correlation observed between Chatbot Marketing Efforts (CME) and brand loyalty ($r= 0.416^{**}$, $p < 0.01$), providing strong support for hypothesis 1. This finding suggests that as organizations invest more in chatbot marketing initiatives, they are likely to experience heightened levels of brand loyalty among consumers.

Furthermore, our analysis reveals positive correlations between CME and several key factors, each of which is statistically significant and lends support to specific hypotheses. Firstly, a positive correlation is evident between CME and credibility, with a strong relationship observed ($r = 0.515^{**}$, $p < 0.01$), supporting hypothesis 2. This suggests that as brands enhance their chatbot marketing efforts, they are also perceived as more credible by consumers.

Similarly, we find positive correlations between CME and accuracy ($r = 0.412^{**}$, $p < 0.01$), system Quality ($r = 0.408^{**}$, $p < 0.01$), and Fulfillment Quality ($r = 0.337^{**}$, $p < 0.01$), supporting hypotheses 3, 4, and 5, respectively. These findings indicate that as organizations invest in chatbot marketing, they are likely to experience improvements in accuracy, system quality, and fulfillment quality, all of which contribute to enhancing the overall customer experience and satisfaction.

Overall, the results of our correlation analysis provide compelling evidence for the positive relationships between chatbot marketing efforts and various dimensions of consumer perception and behavior. These findings underscore the importance of incorporating chatbot technologies into marketing strategies, highlighting their potential to positively impact brand loyalty and other key performance indicators.

Finally, the results of the correlation analysis given above reveal that there is a positive and moderate relationship among the variables. Notably, there is a very strong and statistically significant positive correlation between CME and brand loyalty ($r= 0.416^{**}$, $p < 0.01$) which supports H1. A positive correlation is observed between CME and credibility; the relationship is statistically significant ($r = 0.515^{**}$, $\rho < 0.01$), which supports H2. A positive correlation is observed between CME and accuracy; the relationship is statistically significant ($r = 0.412^{**}$, $\rho < 0.01$), which supports H3. A positive correlation is observed between CME and system quality; the relationship is statistically significant ($r = 0.408^{**}$, $\rho < 0.01$), which supports H4. A positive correlation is observed between CME and fulfillment quality; the relationship is statistically significant ($r = 0.337^{**}$, $\rho < 0.01$), which supports H5.

Regression Analysis and Hypotheses Testing

The regression analysis of our research model was done using SPSS process macro (Popp & Mattison, 2017). We analyzed those results in line with our proposed hypotheses. The outcomes of our data are shown in table 3, table 4, and table 5 below. To enhance the robustness of the findings, a 2000 bootstrap resampling procedure was also performed. The confidence level that was used was set at 90%. This analysis aimed to investigate the extent to which each independent variable, namely Chat bot marketing efforts have an impact on the dependent variable, Brand Loyalty with the mediating role of credibility, accuracy, system quality and fulfillment quality.

Overall, our utilization of the mediation technique within the process macro-model 4 framework represents a methodologically rigorous approach to examining the proposed theoretical model.

Table 3

Results of Model 4						
Y = Brand Loyalty						
M = Credibility						
X = CME						
Predictor	Outcome = Credibility					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.0539	.2399	4.3931	0.000	.5808	1.5269
CME	.5829	.0689	8.4610	0.000	.4470	.7187
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.4949	.2399	5.9823	0.000	1.0021	1.9877
CME	.2879	.0799	3.6020	0.000	.1303	.4455
Credibility	.2928	.0707	4.1441	0.000	.1535	.4322
	Total Effect Model					
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.8035	.2481	7.2698	0.000	1.3143	2.2927
CME	.4586	.0712	6.4371	0.000	.3181	.5991
Total, direct and indirect effects of X on Y						
Total effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.4586	.0712	6.4371	0.000	.3181	.5991
Direct effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.3364	.0755	4.4554	0.000	.1875	.4853
Indirect effect of X on Y						
	Effect	(Boot SE)	(Boot LLCI)	(Boot ULCI)		
	.1222	.0426	.0481	.2130		

The results of model 4, based on Hayes' mediation analysis, provide valuable insights into the relationship between Chatbot Marketing Efforts (CME), credibility, and brand loyalty. For the outcome variable Credibility, the predictor CME demonstrates a significant positive effect ($\beta = 0.5829$, $p < 0.001$), indicating that as CME increases, credibility also increases. Similarly, for brand Loyalty, both CME ($\beta = 0.2879$, $p < 0.001$) and Credibility ($\beta = 0.2928$, $p < 0.001$) show significant positive effects, suggesting that higher levels of both factors lead to increased Brand Loyalty. Furthermore, in the total effect model, the predictor CME exhibits a significant positive effect on Brand Loyalty ($\beta = 0.4586$, $p < 0.001$), encompassing both direct and indirect pathways. Breaking down the effects, the direct effect of CME on brand loyalty is significant ($\beta = 0.3364$, $p < 0.001$), indicating a direct influence of CME on brand loyalty. Additionally, the indirect effect of CME on Brand Loyalty, mediated through Credibility, is also significant (Effect = 0.1222, Boot SE = 0.0426, Boot LLCI = 0.0481, Boot ULCI = 0.2130), suggesting that a portion of the relationship between CME and brand loyalty is mediated by credibility. Overall, these findings underscore the importance of both CME and credibility in driving brand loyalty, with CME exerting both direct

and partially mediated effects on brand loyalty through credibility.

Table 4

Results of Model 4						
Y = Brand Loyalty						
M = Accuracy						
X = CME						
Predictor	Outcome = Accuracy					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.5095	.2494	6.0525	0.000	1.0177	2.0013
CME	.4561	0.716	6.3677	0.000	.3148	.5973
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.3989	.2607	5.3655	0.000	.8848	1.9131
CME	.3364	.0755	4.4554	0.000	.1875	.4853
Accuracy	.2680	.683	3.9267	0.000	.1334	.4026
	Total Effect Model					
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.8035	.2481	7.2698	0.000	1.3143	2.2927
CME	.4586	.0712	6.4371	0.000	.3181	.5991
Total, direct and indirect effects of X on Y						
Total effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.4586	.0712	6.4371	0.000	.3181	.5991
Direct effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.2879	.0799	3.6020	.0004	.1303	.4455
Indirect effect of X on Y						
	Effect	(Boot SE)	(Boot LLCI)	(Boot ULCI)		
	.1707	.0551	3.6020	.2804		

For the outcome variable accuracy, the predictor CME demonstrates a significant positive effect ($\beta = 0.4561$, $p < 0.001$), indicating that as CME increases, Accuracy also increases. When considering brand loyalty, both CME ($\beta = 0.3364$, $p < 0.001$) and accuracy ($\beta = 0.2680$, $p < 0.001$) exhibit significant positive effects. This suggests that higher levels of both factors contribute to increase brand loyalty. In the total effect model, the predictor CME shows a significant positive effect on brand loyalty ($\beta = 0.4586$, $p < 0.001$), encompassing both direct and indirect pathways. Breaking down the effects, the direct effect of CME on brand loyalty is significant ($\beta = 0.2879$, $p < 0.001$), indicating a direct influence of CME on brand loyalty. Additionally, the indirect effect of CME on brand loyalty, mediated through Accuracy, is also significant (Effect = 0.1707, Boot SE = 0.0551, Boot LLCI = 0.1081, Boot ULCI = 0.2804). This suggests that a portion of the relationship between CME and brand loyalty is mediated by accuracy. In summary, these findings highlight the significant role of both CME and accuracy in driving brand loyalty, with CME exerting both direct and partially mediated effects on brand loyalty through accuracy.

Table 5

Results of Model 4						
Y = Brand Loyalty						
M = System Quality						
X = CME						
Predictor	Outcome = System Quality					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	2.1919	.2157	10.1636	0.000	1.7666	2.6172
CME	.3898	.0619	6.2937	0.000	.2677	.5119
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	.7966	.2813	2.8321	0.0051	.2419	1.3513
CME	.2795	.0717	3.8970	0.0001	.1381	.4210
System Quality	.4594	.0751	6.1136	0.0000	.3112	.6075
	Total Effect Model					
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.8035	.2481	7.2698	0.0000	1.3143	2.2927
CME	.4586	.0712	6.4371	0.0000	.3181	.5991
Total, direct and indirect effects of X on Y						
Total effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.4586	.0712	6.4371	0.000	.3181	.5991
Direct effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.2795	.0717	3.8970	0.000	.1381	.4210
Indirect effect of X on Y						
	Effect	(Boot SE)	(Boot LLCI)	(Boot ULCI)		
	.1791	.0465	.0934	.2761		

Regarding system quality as the outcome variable, the predictor CME demonstrates a significant positive effect ($\beta = 0.3898$, $p < 0.001$), indicating that higher levels of CME are associated with increased perceptions of System Quality. When examining brand loyalty, both CME ($\beta = 0.2795$, $p < 0.001$) and system quality ($\beta = 0.4594$, $p < 0.001$) exhibit significant positive effects. This implies that higher levels of both factors contribute to enhance brand loyalty among customers. In the total effect model, the predictor CME shows a significant positive effect on brand loyalty ($\beta = 0.4586$, $p < 0.001$), encompassing both direct and indirect pathways. Breaking down the effects, the direct effect of CME on brand loyalty is significant ($\beta = 0.2795$, $p < 0.001$), indicating a direct influence of CME on brand loyalty. Additionally, the indirect effect of CME on brand loyalty, mediated through System Quality, is also significant (Effect = 0.1791, Boot SE = 0.0465, Boot LLCI = 0.0934, Boot ULCI = 0.2761). This suggests that a portion of the relationship between CME and brand loyalty is mediated by system quality. In summary, these findings underscore the importance of both CME and system quality in driving brand loyalty, with CME exerting both direct and partially mediated effects on brand loyalty through system quality.

Table 6

Results of Model 4						
Y = Brand Loyalty						
M = Fulfillment Quality						
X = CME						
Predictor	Outcome = Fulfillment Quality					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	2.0932	.2212	9.4623	.0000	1.6570	2.5295
CME	.3201	.0635	5.0388	.0000	.1948	.4454
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	.7195	.2658	2.7066	0.0074	.1953	1.2438
CME	.2928	.0673	4.3517	0.0000	.1601	.4255
Fulfillment Quality	.5178	.0709	7.3068	0.0000	.3781	.6576
	Total Effect Model					
Predictor	Outcome = Brand Loyalty					
	(β)	(SE)	(t)	(p)	(LLCI)	(ULCI)
Constant	1.8035	.2481	7.2698	0.0000	1.3143	2.2927
CME	.4586	.0712	6.4371	0.0000	.3181	.5991
Total, direct and indirect effects of X on Y						
Total effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.4586	.0712	6.4371	0.0000	.3181	.5991
Direct effect of X on Y						
	Effect	(SE)	(t)	(p)	(LLCI)	(ULCI)
	.2928	.0673	4.3517	0.0000	.1601	.4255
Indirect effect of X on Y						
	Effect	(Boot SE)	(Boot LLCI)	(Boot ULCI)		
	.1658	.0400	.0921	.2490		

Examining fulfillment quality as the outcome variable, the predictor CME exhibits a significant positive effect ($\beta = 0.3201$, $p < 0.001$), indicating that higher levels of CME are associated with increased perceptions of fulfillment quality among customers. Turning to brand loyalty, both CME ($\beta = 0.2928$, $p < 0.001$) and Fulfillment Quality ($\beta = 0.5178$, $p < 0.001$) demonstrate significant positive effects. This suggests that higher levels of both CME and fulfillment quality contribute to enhancing brand loyalty among customers. In the total effect model, CME shows a significant positive effect on brand loyalty ($\beta = 0.4586$, $p < 0.001$), encompassing both direct and indirect pathways. Breaking down the effects, the direct effect of CME on brand loyalty is significant ($\beta = 0.2928$, $p < 0.001$), indicating a direct influence of CME on brand loyalty. Furthermore, the indirect effect of CME on brand loyalty, mediated through fulfillment quality, is also significant (Effect = 0.1658, Boot SE = 0.0400, Boot LLCI = 0.0921, Boot ULCI = 0.2490). This suggests that fulfillment quality mediates a portion of the relationship between CME and brand loyalty. In summary, these findings highlight the importance of both CME and fulfillment quality in driving brand loyalty, with CME exerting both direct and partially mediated effects on brand loyalty

through fulfillment quality.

Discussion

The results of the mediation model indicate that CME and brand loyalty have a positive direct effect when checked without any mediating variable in between, β= 0.4586,t = 6.4371, 95% with LLCI (0.3181) and ULCI(0.5991) p<0.001, which supports the Hypothesis 1 (H1) . The results of the mediation model indicate that the effect of the independent variable, CME, on a mediator, credibility was found to be positive and significant with β = 0.1707, t = 4.1441, 95% with LLCI (0.068) to ULCI (0.2804) p<0.001. Therefore, hypothesis H2 is supported and accepted. Similarly, the effect of the independent variable, CME, on the mediator Accuracy was found to be positive and significant with β = 0.1222, t = 3.9267, 95%, with LLCI (0.0481) and ULCI (0.4853) p<0.001. Therefore, hypothesis (H3) is supported and accepted. Moreover, when system quality is taken as the outcome variable, the model illustrated that the effect of CME on mediator system quality was found to be positive and significant with β = 0.1797, t = 6.1136, 95%, with LLCI (0.0934) and ULCI (0.2761), p<0.001. Therefore, hypothesis (H4) is supported and accepted. Lastly, the results of the mediation model also indicate that the effect of the independent variable, CME, on a mediator, fulfilment quality was found to be positive and significant with β = 0.1658 t = 7.3068, 95% with LLCI (0.0921) to ULCI (0.2490) p<0.001. Therefore, hypothesis H5 is supported and accepted.

Conclusion

In conclusion, this research paper has delved into the intricate dynamics of chatbot marketing in the digital landscape of today's fast-paced world and its profound impact on brand loyalty. Through a comprehensive investigation of the mediating roles of credibility, accuracy, and system quality, we have sought to extend existing theoretical frameworks and contribute to the burgeoning fields of digital and AI research. As businesses continue to navigate the challenges and opportunities presented by the digital age, this research equips practitioners and scholars alike with insights that can inform strategic decision-making and contribute to the responsible and effective adoption of AI technologies. Ultimately, in a world where digital interactions are becoming increasingly pervasive, understanding the dynamics of chatbot marketing is pivotal for fostering enduring brand loyalty and enhancing the overall customer experience.

Furthermore, this study underscores the need for businesses to adapt to the evolving digital landscape by embracing chatbot technology as a pivotal tool for customer engagement and relationship management. As consumers increasingly rely on digital channels for interactions with brands, the findings of this research emphasize the importance of integrating chatbot marketing efforts into overall marketing strategies. By harnessing the potential of chatbots to enhance credibility, accuracy, and system quality, organizations can cultivate stronger bonds with their customers, leading to enhanced brand loyalty and sustained competitive advantage. As such, the insights gleaned from this study provide valuable guidance for practitioners seeking to leverage chatbot technology effectively in the pursuit of long-term success in the digital marketplace.

Practical Implications

The research's practical implications underscore noteworthy prospects for Pakistani firms to enhance brand loyalty among consumers who actively participate in digital channels. This is accomplished by putting cutting-edge chatbot marketing methods into practice, which have been demonstrated to have a beneficial impact on consumer satisfaction and cultivate a stronger sense

of loyalty. By using chatbots to deliver effective, dependable, and customized customer support, businesses may not only meet but also go beyond client expectations. In order to take full advantage of these findings, companies should concentrate on enhancing the system quality, accuracy, and trustworthiness of their chatbot services on an ongoing basis. In order to keep chatbots dependable and easy to use, frequent monitoring and upgrades are necessary, which reduce errors and increase client confidence. Companies should establish rigorous quality control processes and invest in the latest technologies to maintain high standards of chatbot performance. In order to stay relevant and efficient in the ever-competitive digital market, organizations should also strategically explore switching from traditional customer care techniques to digital alternatives like chatbots. Careful planning and resources are needed for this shift, including the training and development of chatbot agents to make sure they can accurately answer client questions and provide accurate information. Businesses should also think about enhancing chatbot skills by using cutting-edge technology like machine learning and natural language processing (NLP). This will enable more organic and contextually relevant interactions with customers.

The research's emphasis on customer involvement tactics is another important finding. Businesses may improve their methods for engaging customers by realizing the impact chatbot marketing has on consumer interaction and satisfaction. This can be accomplished by adding fun components to chatbot interactions, which will increase user engagement and enjoyment. By doing this, businesses may provide customers with unique experiences that increase brand advocacy and loyalty. Furthermore, the practical ramifications imply that companies in Pakistan should continue being flexible and willing to modify their digital marketing plans in reaction to shifting customer preferences and technological breakthroughs. Businesses can get a competitive edge in the market by staying ahead of industry trends and applying the knowledge gained from this research to their marketing and customer service plans. The practical implications outlined underscore the significance of chatbot marketing strategies for enhancing brand loyalty, urging organizations to optimize key elements such as credibility and accuracy. The transition from traditional customer support methods to chatbot digital solutions is emphasized, with recommendations for investment in the training and development of chatbot agents.

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