

The Impact of Customer Engagement Using Facebook Messenger Chatbots on the Marketing Performance of Cafés in Subic Bay Freeport Zone

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ABSTRACT

This correlational quantitative study examined the impact of customer engagement using Facebook Messenger chatbots on the marketing performance of café businesses in the Subic Bay Freeport Zone. Specifically, it assessed customer engagement in terms of perceived responsiveness, customer trust, and willingness to interact, as well as marketing performance in terms of sales conversion rate and sales growth. The study employed a correlational quantitative research design involving 20 café owners or managers who actively used Facebook Messenger chatbots. Data were collected through a researcher-made questionnaire and analyzed using descriptive statistics and Spearman's Rho. Results revealed that chatbots were perceived as highly responsive and effective at building customer trust and also contributed positively to sales conversion and growth. However, no significant relationship was found between customer engagement using chatbots and marketing performance. The findings suggest that chatbot utilization alone may not directly influence marketing outcomes and should be integrated with broader business and marketing strategies.

INTRODUCTION

The rapid advancement of digital technologies has transformed the way businesses communicate with customers and implement marketing strategies. Among these innovations, artificial intelligence (AI) has become a valuable tool that helps organizations improve efficiency, enhance customer experiences, and strengthen competitiveness in the digital marketplace (Asio & Soriano, 2025; Asio & Suero, 2025; Winecoff & Watkins, 2022). One of the most widely adopted AI applications is the Facebook Messenger chatbot, an automated system that enables businesses to interact with customers, answer inquiries, provide information, and support marketing activities in real time (Haq et al., 2021). Through instant responses and continuous availability, chatbots help businesses improve customer service while reducing operational costs and workload (Rajendran, 2024).

Customer engagement has become a critical factor in the success of café businesses, particularly in highly competitive markets where customer satisfaction and loyalty directly influence sales performance. Facebook Messenger chatbots provide an opportunity for cafés to engage customers more efficiently by offering quick responses, personalized communication, and convenient access to information. Previous studies suggest that chatbot responsiveness and reliability can positively influence customer trust, satisfaction, and willingness to interact with businesses (Moraga et al., 2025; Vu et al., 2022). These benefits make chatbot technology a promising tool for enhancing marketing performance through increased customer engagement.

This study is aligned with the United Nations Sustainable Development Goals (SDGs). It supports SDG 4, Quality Education, by contributing knowledge on the practical application of AI technologies in business and marketing. It also supports SDG 9, Industry, Innovation and Infrastructure, by highlighting how digital innovations such as Facebook Messenger chatbots can improve the competitiveness and operational efficiency of small businesses. Furthermore, the study contributes to SDG 11, Sustainable Cities and Communities, by promoting business resilience and supporting the sustainable growth of local enterprises through technology adoption (Asio, 2026; Bindah et al., 2025; Das, 2024; Mulhim, 2025).

Despite the growing use of Facebook Messenger chatbots, limited empirical research has examined the relationship between chatbot-enabled customer engagement and marketing performance specifically among café businesses in the Subic Bay Freeport Zone. Existing literature has discussed chatbot responsiveness, customer trust, willingness to interact, and purchase-related outcomes in broader contexts; however, limited studies have simultaneously examined these specific customer engagement dimensions, perceived responsiveness and customer trust and willingness to interact, in relation to marketing performance measured through sales conversion rate and sales growth. Thus, there is a measurable gap in determining whether these dimensions of customer engagement using Facebook Messenger chatbots are significantly related to the marketing performance of café businesses in the Subic Bay Freeport Zone.

Findings from previous studies conducted in other industries or countries may not be directly applicable to café businesses in the Subic Bay Freeport Zone because customer interactions, purchasing behavior, business operations, and market conditions may differ across contexts. Unlike broader e-commerce or other service settings, café customers commonly use chatbots for immediate and routine concerns such as menu inquiries, prices, operating hours, reservations, product availability, and order related questions. In addition, cafés in the Subic Bay Freeport Zone operate within a specific local business environment, where customer preferences, technological adoption, and competitive conditions may differ from those reported in other countries or industries. Therefore, findings from previous studies provide a basis for understanding chatbot use but cannot fully establish how chatbot-enabled customer engagement relates to the marketing performance of local café businesses, creating a need for context-specific evidence in the Subic Bay Freeport Zone.

LITERATURE REVIEW

Technology Acceptance Model (TAM)

The study is anchored in the Technology Acceptance Model (TAM) developed by Davis (1989). The theory explains that individuals are more likely to adopt and use a technology when they perceive it as useful and easy to use. Perceived usefulness refers to the extent to which a person believes that a technology improves performance, while perceived ease of use refers to the degree to which the technology is simple and convenient to operate. According to TAM, these perceptions influence users' attitudes, intentions, and actual usage of a technological system.

In this study, Facebook Messenger chatbots are considered technological tools that enable café businesses to automate customer communication, provide immediate responses, and support marketing activities. When customers and business owners perceive chatbots as efficient, reliable, and beneficial, they are more likely to use them, resulting in increased customer engagement and improved marketing outcomes.

Several studies support the application of TAM in chatbot adoption. Moraga et al. (2025) found that usability, responsiveness, and trust significantly improve customer interaction with chatbots. Similarly, Vu et al. (2022) reported that functionality-driven chatbot features strongly influence user acceptance in digital service environments. Li et al. (2023) further emphasized that perceived usefulness and trust are among the strongest predictors of chatbot adoption and continued usage.

H₀: There is no significant relationship between customer engagement using Facebook Messenger chatbots and the marketing performance of café businesses in the Subic Bay Freeport Zone.

H₁: There is a significant relationship between customer engagement using Facebook Messenger chatbots and the marketing performance of café businesses in the Subic Bay Freeport Zone.



Figure 1. Conceptual Framework

METHODOLOGY

This study employed a quantitative correlational research design to examine the impact of customer engagement using Facebook Messenger chatbots on the marketing performance of café businesses in the Subic Bay Freeport Zone. A correlational design was utilized to determine whether a significant relationship exists between customer engagement indicators and marketing performance variables without manipulating any of the study variables (Asio, 2021).

Population and Samples

The respondents consisted of 20 owners or managers of micro and small café businesses operating within the Subic Bay Freeport Zone who had actively utilized Facebook Messenger chatbots as part of their marketing and customer service activities within the past twelve months. The study used purposive sampling, a non-probability sampling technique, to select participants who met the established inclusion criteria. These criteria required respondents to be owners or managers of café businesses classified as micro enterprises with assets not exceeding ₱3,000,000 or small enterprises with assets ranging from ₱3,000,001 to ₱15,000,000 and to have experience using Facebook Messenger chatbots in business operations. The 20 respondents do not represent the entire population of café businesses using Facebook Messenger chatbots in the Subic Bay Freeport Zone. Rather, they constitute a selected group of qualified respondents who met the inclusion criteria and were accessible during the data-gathering period. Therefore, the findings are limited to the selected respondents and may not be generalized to the entire population of café businesses using Facebook Messenger chatbots in the Subic Bay Freeport Zone.

Data were collected using a researcher-made questionnaire distributed through Google Forms. The instrument consisted of items measuring customer engagement through Facebook Messenger chatbots in terms of perceived responsiveness and customer trust and willingness to interact, as well as marketing performance in terms of sales conversion rate and sales growth. Responses were measured using a four-point Likert scale, ranging from Strongly Disagree to Strongly Agree. The questionnaire underwent face and content validation by experts, and a pilot test was conducted to ensure clarity and reliability.

Marketing performance was measured through the self-reported perceptions of participating café owners and managers regarding the sales conversion rate and sales growth associated with their use of Facebook Messenger chatbots. The study did not use independently verified sales records, financial statements, or transaction-level data as objective measures of marketing performance. Since these measures relied on self-reported perceptions, the

responses may be subject to response bias. Respondents may have provided more favorable or less favorable assessments based on their personal experiences, expectations, or perceptions, rather than objectively verified business outcomes, which may result in an overestimation or underestimation of the actual relationship between chatbot-enabled customer engagement and marketing performance.

Data Analysis Tools

For data analysis, descriptive statistics such as weighted mean and standard deviation were used to determine the respondents' perceptions of customer engagement and marketing performance. To test the relationship between customer engagement and marketing performance, Spearman's Rho correlation analysis was employed due to the non-normal distribution of the data. Statistical analyses were performed using Microsoft Excel and SPSS, with a significance level of 0.05 used to determine whether the relationships between variables were statistically significant.

RESEARCH RESULT

Table 1. Perceived Responsiveness of Facebook Messenger Chatbots

Indicators	Mean	SD	Remarks
1. I notice that the chatbot handles multiple customer inquiries efficiently.	3.85	0.37	Strongly Agree
2. I observe that the chatbot provides instant replies during peak business hours.	3.7	0.47	Strongly Agree
3. I believe that the chatbot reduces waiting time for customers compared to manual responses.	3.65	0.75	Strongly Agree
4. I believe that the chatbot delivers clear information to customers that reduces frustration.	3.55	0.69	Strongly Agree
5. I believe that the chatbot resolves inquiries efficiently without human intervention.	3.40	0.75	Strongly Agree
Average	3.63	0.63	Strongly Agree

Legend: Strongly Agree (3.25-4.00); Agree (2.50-3.24); Disagree (1.75-2.49); Strongly Disagree (1.00-1.74)

As presented in Table 1, respondents strongly agreed that Facebook Messenger chatbots are responsive tools for customer engagement, with an overall mean of 3.63. The highest-rated indicator was the chatbot's ability to handle multiple customer inquiries efficiently ($M = 3.85$), indicating that respondents highly value its capacity to manage several customer concerns at once. On the other hand, the lowest-rated indicator was the chatbot's ability to resolve inquiries without human intervention ($M = 3.40$), suggesting that respondents still recognize the need for human assistance in handling more complex concerns.

Table 2. Customer Engagement of Café Businesses in Subic Bay Freeport Zone According to Customer Trust and Willingness to Interact

Indicators	Mean	SD	Remarks
1. I believe that customers trust the information provided by our Facebook messenger chatbot.	3.60	0.50	Strongly Agree
2. I observe that customers feel confident interacting with the chatbot because it consistently gives correct responses.	3.55	0.51	Strongly Agree
3. I consistently receive no feedback from customers concerning data security issues related to chatbots, positively influencing their confidence.	3.50	0.69	Strongly Agree
4. I believe that the chatbot strengthens customer trust, thereby increasing customers' willingness to engage with our business.	3.55	0.51	Strongly Agree
5. I observe that customers are willing to engage with chatbots regardless of their perceived artificial nature.	3.75	0.44	Strongly Agree
Average	3.59	0.53	Strongly Agree

Legend: Strongly Agree (3.25-4.00); Agree (2.50-3.24); Disagree (1.75-2.49); Strongly Disagree (1.00-1.74)

As shown in Table 2, respondents strongly agreed that Facebook Messenger chatbots contribute to customer trust and willingness to interact, with an overall mean of 3.59. The highest-rated indicator was customers' willingness to engage with chatbots regardless of their artificial nature ($M = 3.75$), indicating strong acceptance of chatbot technology. Meanwhile, the lowest-rated indicator was the absence of customer feedback concerning data security issues related to chatbots ($M = 3.50$), although it still received a Strongly Agree rating.

Table 3. Marketing Performance of Cafe Businesses in Subic Bay Freeport Zone According to Conversion Rate

Indicators	Mean	SD	Remarks
1. I believe the chatbot helps convert customer inquiries into confirmed orders.	3.45	0.69	Strongly Agree
2. I observe that customers are more likely to make immediate purchase decisions after interacting with the chatbot.	3.45	0.60	Strongly Agree
3. I find that the chatbot provides information that directly influences customers to proceed with the transaction.	3.55	0.60	Strongly Agree
4. I feel that the chatbot increases the number of inquiries that turn into paid orders.	3.40	0.68	Strongly Agree
5. I notice that the chatbot prompts customers to finalize their orders more quickly.	3.40	0.75	Strongly Agree
Average	3.45	0.66	Strongly Agree

Legend: Strongly Agree (3.25-4.00); Agree (2.50-3.24); Disagree (1.75-2.49); Strongly Disagree (1.00-1.74)

Table 3 shows that respondents agreed that Facebook Messenger chatbots positively influence sales conversion, with an overall mean of 3.45. The highest-rated indicator was the chatbot's ability to provide information that directly influences customers to proceed with transactions ($M = 3.55$). In contrast, the lowest-rated indicators were the chatbot's ability to increase the number of inquiries that turn into paid orders ($M = 3.40$) and its ability to prompt customers to finalize orders more quickly ($M = 3.40$).

Table 4. Marketing Performance of Cafe Businesses in Subic Bay Freeport Zone According to Sales Growth

Indicators	Mean	SD	Remarks
1. I observe that overall monthly sales have improved since adopting the chatbot.	3.35	0.59	Strongly Agree
2. I believe that chatbot-assisted marketing contributes to gradual revenue growth.	3.45	0.69	Strongly Agree
3. I find that chatbot-supported promotions help broaden the customer base.	3.55	0.60	Strongly Agree
4. I believe the chatbot encourages repeat purchases, contributing to continuous sales improvement.	3.70	0.57	Strongly Agree
5. I notice that integrating the chatbot into the café's marketing strategy has resulted in long-term revenue increases.	3.45	0.60	Strongly Agree
Average	3.50	0.61	Strongly Agree

Legend: Strongly Agree (3.25-4.00); Agree (2.50-3.24); Disagree (1.75-2.49); Strongly Disagree (1.00-1.74)

As presented in Table 4, respondents agreed that Facebook Messenger chatbots contribute to sales growth, with an overall mean of 3.50. The highest-rated indicator was the chatbot's ability to encourage repeat purchases, contributing to continuous sales improvement ($M = 3.70$). Conversely, the lowest-rated indicator was the improvement in overall monthly sales since adopting the chatbot ($M = 3.35$), suggesting that the effect of chatbot use on sales growth may be gradual rather than immediate.

Table 5. Significant Relationship Between Customer Engagement and the Marketing Performance of Café Businesses in the Subic Bay Freeport Zone

	Customer Indicator	Engagement	p	Asymp. Sig.	Remarks
Messenger Chatbots	Perceived Responsiveness		.229	.110	Not Significant
	Customer Trust and Willingness to Interact		.090	.533	Not Significant

Note: Level of Significance: 0.05

The results in Table 5 reveal that there is no significant relationship between customer engagement through Facebook Messenger chatbots and the marketing performance of café businesses. The indicators perceived responsiveness ($p = .110$) and customer trust and willingness to interact ($p = .533$) both obtained p -values greater than the 0.05 level of significance, resulting in a Not Significant interpretation. Therefore, the null hypothesis stating that there is no significant relationship is not rejected. These findings indicate that while chatbots are viewed positively by customers, their influence on customer engagement is not strong enough to significantly affect marketing performance, suggesting that other factors may play a more important role in driving customer engagement.

Of particular note, this study is limited by its small sample size of 20 café owners or managers. The limited number of respondents may reduce the statistical power of the correlation analysis, making it more difficult to detect a statistically significant relationship between customer engagement using Facebook Messenger chatbots and marketing performance. Furthermore, the small sample size may limit the generalizability of the findings to the broader population of café businesses.

DISCUSSION

The results of this study reveal that café businesses in the Subic Bay Freeport Zone generally have a positive perception toward Facebook Messenger chatbots as tools for customer engagement and marketing performance. Respondents strongly agreed that chatbots are perceived as highly responsive, particularly in handling multiple inquiries, providing instant replies, reducing waiting time, and delivering clear information. This finding aligns with Moraga et al. (2025), who highlight that usability and responsiveness significantly improve customer interaction in Philippine businesses. Similarly, Haq et al. (2021) pointed out that Facebook Messenger chatbots enhance customer service by enabling functions such as reservations and instant responses without requiring customers to leave the platform.

In terms of customer trust and willingness to interact, it indicates that customers generally trust chatbot-provided information and feel confident engaging with automated systems. The highest-rated indicator showed that customers are willing to interact with chatbots regardless of their artificial nature, reflecting a growing acceptance of AI-driven communication in the local café setting. This supports the findings of Benabdelouahed and Elkhatibi (2024); it highlights that chatbots promote trust and loyalty through conversational approaches. Furthermore, Tsai et al. (2021) found that social presence communication in chatbots positively influences initial trust, which in turn enhances user engagement and satisfaction.

In marketing performance, chatbots were perceived to positively influence sales conversion. Respondents agreed that chatbots help convert inquiries into purchases, influence purchase decisions, and prompt customers to finalize orders more quickly. These findings are consistent with Subagyo et al. (2025), reporting that AI tools increase customer interaction rates by 25%, and Marwah et al. (2025)

emphasizing that 24/7 chatbot support is crucial for lead generation and conversion. Similarly, Le (2023) found that the information value of AI-powered chatbots significantly affects customer purchase behavior.

In terms of sales growth, it suggests that chatbots contribute to revenue improvement, particularly by encouraging repeat purchases and broadening the customer base. This aligns with Kumar et al. (2025), who argued that humanized chatbot interactions build stronger customer engagement and drive repeat purchases. Donati et al. (2025) also found that AI-powered chatbots boost sales and conversion rates, especially for routine inquiries, while Zhang and Narayandas (2025) emphasized that AI-assisted chatbots respond faster and keep customers more engaged than human-only support.

Overall, this study affirms that Facebook Messenger chatbots are perceived as useful tools for responsiveness, trust-building, and basic sales support among cafés in the Subic Bay Freeport Zone. However, their impact on marketing performance remains limited and not statistically significant, highlighting the need for complementary strategies such as human oversight, personalized engagement, and integration with traditional and digital marketing efforts.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that Facebook Messenger chatbots are perceived as effective tools for enhancing customer engagement among café businesses in the Subic Bay Freeport Zone. Respondents recognized chatbots for their responsiveness, ability to provide immediate assistance, and capacity to build customer trust and encourage interaction. The findings also indicate that chatbots contribute positively to marketing performance by supporting sales conversion and sales growth, particularly through facilitating purchase decisions and encouraging repeat transactions.

However, despite these positive perceptions, statistical analysis revealed no significant relationship between customer engagement using Facebook Messenger chatbots and marketing performance. This suggests that while chatbots improve communication efficiency and customer experience, they are not the sole determinants of business success. Other factors, such as service quality, product offerings, pricing strategies, and overall customer satisfaction, may play a more substantial role in influencing marketing performance.

The study supports the Technology Acceptance Model (TAM), which suggests that users are more likely to adopt technology when it is perceived as useful and easy to use. The positive evaluations of chatbot responsiveness and trust demonstrate the acceptance of chatbot technology among café businesses. Nevertheless, businesses should view chatbots as supportive tools that complement broader marketing and customer relationship strategies.

From the aforementioned results and conclusions, the researchers hereby recommend the following:

Café businesses should continue utilizing Facebook Messenger chatbots to provide immediate responses to customer inquiries and improve customer service efficiency. Maintaining quick and accurate communication can enhance customer satisfaction and strengthen customer relationships.

Business owners should combine chatbot technology with human customer support, particularly when handling complex concerns that require empathy, critical thinking, or personalized solutions. A hybrid approach can provide a more comprehensive customer experience.

To maximize marketing performance, cafés should integrate chatbots with other digital marketing strategies such as social media campaigns, loyalty programs, promotional offers, and personalized customer engagement initiatives. Relying solely on chatbot technology may limit overall marketing effectiveness.

Businesses should regularly update chatbot content and features to ensure the accuracy of information and maintain customer trust. Improving conversational capabilities may also help create a more engaging and less robotic customer experience.

The findings of this study may serve as a basis for developing practical strategies that support the digital transformation and competitiveness of café businesses while contributing to SDG 9 (Industry, Innovation and Infrastructure) and SDG 11 (Sustainable Cities and Communities) through the adoption of innovative business technologies.

ADVANCED RESEARCH

Future researchers are encouraged to conduct similar studies using larger sample sizes and broader geographical coverage to improve the generalizability of the findings. Additional variables such as customer satisfaction, service quality, brand loyalty, and customer retention may also be explored to gain a deeper understanding of the factors influencing marketing performance.

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