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Research Article

E-Business Strategies and Customer Satisfaction: The Role of Customer Engagement in The Banking Sector

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Abstract:

Purpose: In Ghana, the banking sector is increasingly leveraging e-business strategies such as online banking platforms, mobile banking applications, and real-time customer support to improve service delivery and enhance customer satisfaction. Despite these advancements, achieving consistent customer satisfaction remains a significant challenge. Studies indicate that gaps often exist between customer expectations and the actual experiences provided by e-business platforms, leading to dissatisfaction and attrition. This disconnect raises questions about the effectiveness of e-business strategies in meeting the diverse needs of customers within the Ghanaian banking sector. Customer engagement has been recognized as a critical factor in bridging this gap. Engaged customers are more likely to derive satisfaction from e-business platforms, as they feel valued and involved in the service process. However, evidence suggests that many banks in Ghana have yet to fully capitalize on the potential of customer engagement to maximize the benefits of e-business strategies.

Method: A convenience sampling technique was used to obtain a sample size of 260. This study adopts an explanatory research design, which is appropriate for identifying and analyzing cause-and-effect relationships among variables. This study relies on primary data as the main source of information for examining the factors influencing the implementation and performance of e-business services within the banking sector. A structured questionnaire using a Likert scale was employed as the data collection instrument.

Findings: The findings of the study showed a positive relationship between e-business strategies and customer satisfaction. The second analysis demonstrated that customer engagement has an even stronger influence on customer satisfaction. Crucially, the moderation analysis revealed that customer engagement significantly enhances the impact of e-business strategies on customer satisfaction.

Unique Contribution to theory, practice, and policy: The findings affirm and extend existing theories in digital marketing and relationship management by demonstrating that both technological capability and relational dynamics are vital to fostering customer satisfaction. Organizations should continue investing in digital technologies such as user-friendly websites, mobile apps, personalized online services, and efficient e-commerce systems.

Keywords: E-Business Strategies; Customer Satisfaction; Customer Engagement.

1.1 Background of the Study

The rapid advancement of digital technologies has significantly transformed the banking sector, reshaping how financial institutions interact with customers and deliver services. In Ghana, the adoption of e-business strategies has become a critical focus for banks aiming to remain competitive and meet the growing expectations of tech-savvy customers. E-business strategies encompass a range of digital initiatives, including online banking platforms, mobile applications, digital payment systems, and social media marketing, which collectively aim to enhance service delivery and foster customer satisfaction (Asiedu et al., 2021). Customer satisfaction, a key determinant of business success, is profoundly influenced by how well banks integrate these strategies to deliver seamless and efficient services. According to Mensah and Osei (2023), the competitive nature of Ghana's banking industry necessitates a strategic emphasis on customer-centric e-business solutions to maintain customer loyalty and market share. However, the effectiveness of these strategies is contingent upon the level of customer engagement, which acts as a critical intermediary in ensuring that the implemented solutions resonate with customers' needs and preferences. Customer engagement, defined as the emotional and behavioral connection between a customer and a brand, has emerged as a pivotal factor in the digital banking ecosystem. Engaged customers are more likely to utilize digital banking services, provide feedback, and advocate for the brand, thereby driving both satisfaction and business growth (Boakye et al., 2022).

The integration of customer engagement in e-business strategies allows banks to personalize experiences, address grievances proactively, and build long-term relationships, which are essential for sustained customer satisfaction. In the Ghanaian context, the role of customer engagement is particularly significant due to the diverse customer demographics and varying levels of digital literacy. Banks such as GCB Bank, Ecobank, and Fidelity Bank have implemented e-business strategies with varying degrees of success, highlighting the need for a nuanced understanding of how customer engagement mediates the relationship between these strategies and customer satisfaction (Nyarko & Kusi, 2020). Despite the apparent benefits, challenges such as cybersecurity risks, resistance to change, and infrastructure limitations pose significant barriers to the full realization of e-business potential in Ghana's banking sector (Adusei et al., 2024).

Recent studies emphasize the need for a holistic approach that integrates technological innovation with customer engagement practices to achieve optimal outcomes. For instance, Asante and Addai (2023) found that banks that prioritized interactive digital platforms and real-time customer support witnessed higher satisfaction levels compared to those that relied solely on transactional e-business models. These findings underscore the importance of fostering active customer participation and trust in digital platforms to enhance satisfaction. Furthermore, regulatory frameworks and policies by the Bank of Ghana play a critical role in shaping the adoption and impact of e-business strategies. The push for financial inclusion through digital channels aligns with national development goals, providing banks with an incentive to invest in technologies that enhance accessibility and engagement (Bank of Ghana, 2022). However, aligning these strategies with customer needs remains a challenge that requires continuous evaluation and adaptation. The intersection of e-business strategies and customer satisfaction in Ghana's banking sector highlights the pivotal role of customer engagement as a mediating factor. By leveraging digital tools and fostering meaningful interactions, banks can enhance customer experiences, build loyalty, and drive long-term growth. This study sought to explore how customer engagement influences the relationship between e-business strategies and customer satisfaction, providing insights into best practices and areas for improvement in the Ghanaian banking context.

1.2 Problem Statement

The advent of e-business strategies has revolutionized how banks interact with customers, offering digital solutions that promise efficiency, convenience, and improved satisfaction (Dwivedi et al., 2021). In Ghana, the banking sector is increasingly leveraging e-business strategies such as online banking platforms, mobile banking applications, and real-time customer support to improve service delivery and enhance customer satisfaction. Despite these advancements, achieving consistent customer satisfaction remains a significant challenge. Studies indicate that gaps often exist between customer expectations and the actual experiences provided by e-business platforms, leading to dissatisfaction and attrition (Gyasi & Baidoo, 2023). This disconnect raises questions about the effectiveness of e-business strategies in meeting the diverse needs of customers within the Ghanaian banking sector. Customer engagement has been recognized as a critical factor in bridging this gap. Engaged customers are more likely to derive satisfaction from e-business platforms, as they feel valued and involved in the service process (Kusi-Sarpong et al., 2022). However, evidence suggests that many banks in Ghana have yet to fully capitalize on the potential of customer engagement to maximize the benefits of e-business strategies. For instance, insufficient personalization of services, limited interactive features on digital platforms, and inadequate feedback mechanisms undermine the ability of banks to foster meaningful customer engagement (Amankwah et al., 2021).

Moreover, while global research highlights the positive impact of customer engagement on satisfaction in digital banking, there is limited empirical evidence specific to the Ghanaian context. Given the unique socioeconomic and technological environment in Ghana, assumptions based on findings from other regions may not be entirely applicable (Tetteh & Osei, 2020). This gap in context-specific research makes it challenging for banks to develop tailored strategies that effectively integrate customer engagement into their e-business frameworks. The consequences of these challenges are far-reaching. Dissatisfied customers are likely to switch to competitors, negatively affecting customer retention and loyalty (Mensah & Boakye, 2024). Furthermore, banks that fail to optimize their e-business strategies risk losing the competitive advantage required to thrive in an increasingly digital economy. Therefore, addressing the role of customer engagement in enhancing customer satisfaction through e-business strategies is not only critical for improving service delivery but also for sustaining the competitiveness of banks in Ghana. This study shall seek to investigate how e-business strategies influence customer satisfaction in the banking sector of Ghana, with a specific focus on the moderatingg role of customer engagement. It aims to provide evidence-based insights to inform the development of customer-centric e-business practices that align with the needs and expectations of Ghanaian banking customers.

2. Literature Review

2.1 The Concept E-Business Strategies

E-business strategies encompass the use of digital technologies to enhance business processes, improve customer experiences, and create competitive advantages (Chaffey & Ellis-Chadwick, 2020). These strategies include business-to-business (B2B) and business-to-consumer (B2C) models, where companies leverage online platforms for sales, marketing, and customer engagement (Turban et al., 2018). One fundamental e-business strategy is omnichannel integration, which ensures a seamless experience across digital and physical channels. Organizations that effectively integrate e-commerce, mobile apps, and social media can enhance customer satisfaction and loyalty (Verhoef et al., 2021). Additionally, personalization and data-driven marketing have become essential, as companies utilize big data analytics and artificial intelligence (AI) to deliver tailored recommendations and targeted advertisements (Lemon & Verhoef, 2016). Another critical strategy is supply chain digitalization, where businesses implement cloud computing, blockchain, and Internet of Things (IoT) technologies to enhance transparency, efficiency, and responsiveness (Ivanov et al., 2019). Furthermore, cybersecurity and trust-building are vital, as consumers are increasingly concerned about data privacy and protection. Companies that implement robust security measures and comply with regulations such as the General Data Protection Regulation (GDPR) gain a competitive edge (Kshetri, 2021). Lastly, platform-based business models, such as Amazon and Alibaba, exemplify the power of digital ecosystems, where businesses not only sell products but also facilitate third-party transactions, fostering network effects (Parker et al., 2016). As digital transformation accelerates, organizations that adopt innovative e-business strategies will remain competitive in the global market.

E-business strategies encompass the use of digital technologies to enhance business operations, customer interactions, and competitive advantage. As the digital economy grows, firms are leveraging e-business models to optimize efficiency and market reach (Laudon & Traver, 2021). According to Chaffey (2019), e-business strategies integrate various digital tools, including online platforms, mobile applications, and cloud computing, to streamline business functions and improve customer satisfaction. A significant aspect of e-business strategies is the transformation of traditional business models into digital formats. Turban et al. (2020) highlight that firms utilizing e-business strategies benefit from cost reduction, improved operational efficiency, and enhanced customer experience. Digital marketing, e-commerce platforms, and electronic customer relationship management (e-CRM) play crucial roles in fostering engagement and loyalty (Kotler, Kartajaya, & Setiawan, 2021). These strategies also enable organizations to harness big data and analytics for better decision-making and market forecasting (Chen, Chiang, & Storey, 2019). Furthermore, e-business strategies contribute to the globalization of businesses by facilitating cross-border transactions and expanding market presence (Bharadwaj et al., 2020). The rapid advancements in artificial intelligence, blockchain, and the Internet of Things (IoT) have further transformed e-business approaches, making them more agile and data-driven (Porter & Heppelmann, 2020). However, challenges such as cybersecurity risks, digital divide, and customer trust issues remain significant barriers to adoption (McKinsey & Company, 2021). In conclusion, e-business strategies are essential for modern enterprises seeking to maintain competitive advantage and drive customer satisfaction. Future research should explore the evolving impact of emerging technologies on e-business success and the sustainability of digital transformation in various industries.

2.2. Customer Satisfaction

Customer satisfaction is a key determinant of business success, as it influences customer loyalty, repeat purchases, and overall organizational performance (Kotler & Keller, 2020). It refers to the extent to which a product or service meets or exceeds customer expectations (Oliver, 2015). Businesses strive to enhance customer satisfaction by improving service quality, product performance, and customer experience, all of which contribute to competitive advantage (Zeithaml, Bitner, & Gremler, 2019). Several factors influence customer satisfaction, including product quality, service quality, price fairness, and customer experience. Product quality plays a critical role in shaping customer perceptions, as high-quality products increase trust and reliability (Parasuraman, Zeithaml, & Berry, 1988). Service quality, measured by responsiveness, reliability, and empathy, is another key driver of satisfaction, particularly in service-oriented industries (Grönroos, 2007). Price fairness also affects customer satisfaction, as customers compare the value they receive against the cost incurred (Anderson & Srinivasan, 2003). Lastly, customer experience, which encompasses interactions with the brand across different touchpoints, significantly shapes overall satisfaction (Lemon & Verhoef, 2016).

There is a strong correlation between customer satisfaction and brand loyalty. Satisfied customers are more likely to engage in repeat purchases and recommend products to others (Hennig-Thurau et al., 2002). According to Fornell et al. (2016), companies with high customer satisfaction scores often experience lower churn rates and increased profitability. Additionally, satisfied customers are more likely to defend a brand against negative publicity and contribute to positive word-of-mouth marketing (Söderlund, 2018). Customer satisfaction is commonly measured using customer surveys, Net Promoter Score (NPS), and Customer Satisfaction Index (CSI) (Mittal & Frennea, 2018). Surveys often utilize Likert-scale questions to assess customer perceptions of service and product quality (Parasuraman et al., 1988).

The NPS categorizes customers into promoters, passives, and detractors based on their likelihood of recommending the brand (Reichheld, 2003). The CSI is a standardized measure that evaluates overall satisfaction and loyalty trends within industries (Fornell et al., 2016). Digital transformation has significantly influenced customer satisfaction by enhancing accessibility, personalization, and responsiveness. Businesses utilize artificial intelligence (AI) and data analytics to predict customer needs and personalize offerings (Rust & Huang, 2014). Additionally, social media platforms allow customers to interact with brands in real time, influencing their satisfaction levels (Kumar et al., 2021). The integration of digital self-service options, such as chatbots and mobile applications, further improves customer convenience and experience (Lemon & Verhoef, 2016). Customer satisfaction remains a crucial factor in sustaining business success and customer retention. Organizations must continuously improve product and service quality, pricing strategies, and customer experience to maintain high satisfaction levels. With the increasing role of digitalization, businesses should leverage technology to enhance customer interactions and build long-term relationships. Future research should explore how emerging technologies such as AI and blockchain impact customer satisfaction in different industries.

2.3 Customer Engagement

Customer engagement (CE) is a critical aspect of modern marketing and business strategy, as it reflects the depth of interactions between consumers and brands (Brodie et al., 2019). It extends beyond mere transactions to include emotional, cognitive, and behavioral involvement with a brand, fostering long-term relationships and customer loyalty (Kumar & Pansari, 2016). With the rise of digital technologies, businesses are increasingly focusing on interactive and personalized engagement strategies to enhance customer experiences and drive brand advocacy (Van Doorn et al., 2017). Customer engagement is broadly defined as a customer's voluntary contribution to a firm's marketing activities beyond purchase behavior (Brodie et al., 2011). It involves three key dimensions: cognitive engagement, which refers to a customer's level of thought and interest in a brand; emotional engagement, which involves affective responses such as trust and attachment; and behavioral engagement, which encompasses actions such as word-of-mouth promotion, social media interactions, and brand co-creation (Hollebeek et al., 2014).

Several factors influence customer engagement, including brand experience, perceived value, customer satisfaction, and social interactions. Brand experience is a significant driver of engagement, as positive interactions enhance trust and loyalty (Lemon & Verhoef, 2016). Perceived value, which includes functional, emotional, and social benefits derived from a product or service, significantly influences the level of engagement (Gummerus et al., 2012). Customer satisfaction also plays a crucial role, as satisfied customers are more likely to participate in brand-related activities (Pansari & Kumar, 2017). Additionally, social interactions, particularly in digital environments, encourage customers to engage through discussions, reviews, and shared content (Dessart et al., 2015). The proliferation of digital platforms has transformed customer engagement by enabling real-time, interactive, and data-driven interactions (Kumar et al., 2019). Social media platforms, online communities, and mobile applications provide businesses with opportunities to create personalized and immersive engagement experiences (Bowden et al., 2021).

Artificial intelligence (AI) and big data analytics further enhance engagement by predicting customer preferences and delivering tailored content (Hoyer et al., 2020). Additionally, gamification and influencer marketing have emerged as powerful tools for fostering engagement and brand advocacy (Hamari et al., 2014). Customer engagement has a direct impact on business performance, influencing customer retention, brand equity, and revenue growth (Kumar & Reinartz, 2016). Engaged customers are more likely to exhibit brand loyalty, advocate for the brand, and provide valuable feedback that helps companies improve their offerings (Jaakkola & Alexander, 2014). Research shows that firms with high customer engagement levels experience greater customer lifetime value and reduced acquisition costs (Verhoef et al., 2010). Furthermore, engagement fosters innovation, as customers contribute ideas and co-create products through participatory initiatives (Brodie et al., 2013).

Customer engagement is commonly assessed using qualitative and quantitative metrics. These include customer interaction frequency, social media engagement rates, Net Promoter Score (NPS), and Customer Lifetime Value (CLV) (Kumar et al., 2019). Surveys and sentiment analysis also help businesses gauge customer sentiment and brand perception (Calder et al., 2016). By continuously tracking engagement metrics, organizations can refine their marketing strategies to optimize customer relationships and enhance business growth. Customer engagement is a fundamental driver of brand success, fostering long-term relationships and sustainable business growth. Companies must invest in digital engagement strategies, personalized experiences, and community-building initiatives to strengthen their connection with customers. As digitalization advances, future research should explore the role of emerging technologies such as virtual reality (VR) and blockchain in enhancing customer engagement.

2.4 Expectation-Confirmation Theory

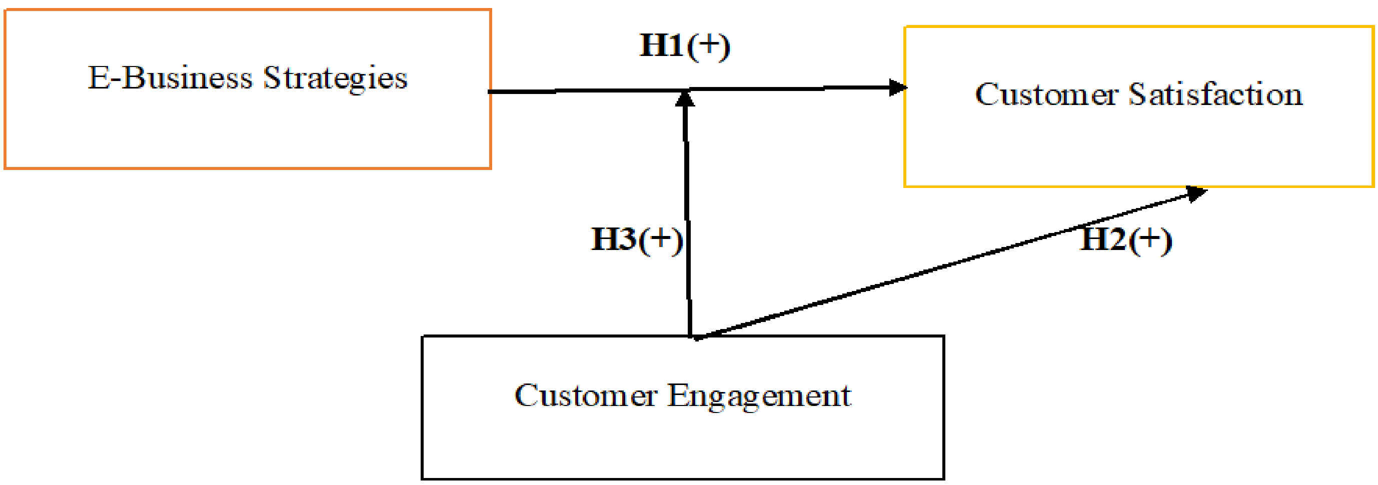
Expectation-Confirmation Theory (ECT), introduced by Oliver (1980), provides a strong theoretical foundation for understanding how customer expectations, experiences, and engagement influence satisfaction in the context of e-business strategies. ECT posits that customer satisfaction is determined by pre-purchase expectations, perceived performance, and confirmation (or disconfirmation) of expectations (Bhattacherjee, 2001). When expectations are met or exceeded, customers experience positive confirmation, leading to satisfaction, loyalty, and ongoing engagement. Conversely, unmet expectations result in negative disconfirmation, reducing satisfaction and engagement (Oliver, 1997). In the e-business landscape, companies implement digital platforms, personalized services, and seamless transaction experiences to shape customer expectations and enhance satisfaction (Kim et al., 2009). ECT suggests that customers develop expectations based on website usability, product quality, customer service, and digital interactions before engaging with an online platform (Gummerus et al., 2012).

If these expectations align with actual experiences—such as fast delivery, secure payments, responsive customer support, and personalized recommendations—customers are more likely to experience positive confirmation, leading to higher satisfaction and stronger engagement (Bhattacherjee & Premkumar, 2004). Customer engagement acts as a reinforcing mechanism in the expectation-confirmation process by fostering interaction and feedback loops between businesses and consumers. Engaged customers provide reviews, feedback, and referrals, influencing the expectations of new customers and enhancing brand credibility (Hollebeek et al., 2014). E-businesses that leverage interactive content, chatbots, loyalty programs, and omnichannel strategies encourage active participation, which strengthens the alignment between customer expectations and service delivery, further boosting satisfaction and retention (Gao & Bai, 2014). ECT provides a robust framework for analyzing how e-business strategies shape customer expectations and influence satisfaction through engagement mechanisms. By ensuring that online services meet or exceed expectations, businesses can enhance satisfaction, foster engagement, and build long-term loyalty in the digital marketplace.

2.4.1 The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), is a widely recognized framework for understanding how users adopt and use technology-based systems. It posits that two key factors influence technology acceptance: Perceived Usefulness (PU)—the belief that a system will enhance performance—and Perceived Ease of Use (PEOU)—the extent to which a system is effortless to use (Venkatesh & Davis, 2000). These factors drive attitude toward usage, behavioral intention, and actual system use, ultimately influencing customer satisfaction and engagement in e-business settings (Gefen et al., 2003). E-business strategies, such as personalized digital experiences, omnichannel integration, and AI-driven support systems, significantly impact customer perceptions of usefulness and ease of use. A well-designed e-commerce platform with a user-friendly interface enhances PEOU, leading to a higher adoption rate and sustained customer engagement (Alalwan et al., 2018). Moreover, features such as fast checkout, secure transactions, and real-time customer service increase PU, reinforcing positive attitudes and satisfaction (Cheng et al., 2020). Customer engagement strengthens the TAM model by enhancing interactions between businesses and consumers. Engaged customers actively participate in reviews, social media discussions, and personalized loyalty programs, which increases trust and long-term commitment (Hollebeek et al., 2014). When e-business strategies provide seamless, engaging experiences, they improve both customer perception of value and ease of interaction, leading to higher satisfaction and advocacy (Dwivedi et al., 2019). The TAM framework effectively explains how e-business strategies shape customer acceptance, satisfaction, and engagement. By designing intuitive and useful digital platforms, businesses can enhance customer trust, improve engagement, and drive long-term satisfaction in the online marketplace.

Figure 2.1 Hypothetical Model for the Study



2.5 Relationship between E-Business Strategies and Customer Satisfaction

E-business strategies encompass digital marketing, online customer service, AI-driven personalization, and omnichannel retailing, all of which significantly impact customer satisfaction (Chatterjee et al., 2020). In the digital economy, businesses leverage technology to enhance service efficiency, improve convenience, and create seamless customer experiences, leading to higher levels of satisfaction (Huang & Benyoucef, 2017). Several empirical studies affirm that e-business strategies positively influence customer satisfaction. Bilgihan (2016) found that personalized recommendations and interactive e-commerce interfaces increase consumer trust and retention. Similarly, Gefen et al. (2003) highlighted that transaction security and website usability directly affect customer satisfaction in online shopping environments. Furthermore, Verhoef et al. (2019) emphasized that omnichannel retailing enhances customer experience consistency, reducing dissatisfaction caused by fragmented interactions. The role of customer engagement further strengthens this relationship. Hollebeek et al. (2014) argued that customers who actively engage with brands via social media, loyalty programs, and interactive content develop higher satisfaction and emotional attachment to the brand. Moreover, Alalwan et al. (2018) showed that real-time communication via AI-powered chatbots and social platforms significantly improves perceived service quality, enhancing satisfaction levels. Based on the empirical evidence, the following hypothesis is proposed:

H1: E-business strategies have a positive and significant impact on customer satisfaction.

2.5.1 Relationship between Customer Engagement and Customer Satisfaction

Customer engagement plays a critical role in shaping customer satisfaction by fostering emotional connections, enhancing experiences, and building brand loyalty (Hollebeek et al., 2014). Engagement refers to customers' cognitive, emotional, and behavioral investment in brand interactions, which may occur through social media, personalized communication, loyalty programs, and interactive platforms (Brodie et al., 2019). Empirical studies suggest that higher levels of customer engagement lead to increased satisfaction. Pansari and Kumar (2017) found that customers who actively participate in brand-related activities develop stronger relationships with the brand, leading to higher satisfaction. Alalwan et al. (2018) demonstrated that businesses leveraging AI-driven chatbots, real-time customer support, and interactive digital content create more personalized experiences, which significantly enhance satisfaction levels. Additionally, Van Doorn et al. (2017) emphasized that engagement in online brand communities fosters trust, positive word-of-mouth, and long-term satisfaction. Furthermore, self-determination theory suggests that customers derive satisfaction from engagement because it fulfills their psychological needs for competence, autonomy, and relatedness (Deci & Ryan, 2000). This explains why brands that encourage meaningful interactions and empower customers tend to have higher satisfaction rates. Based on the above discussion, the following hypothesis is proposed:
H2: Customer engagement has a positive and significant impact on customer satisfaction.

2.5.2 Moderating effect of Customer Engagement

Customer engagement serves as a critical moderator in the relationship between e-business strategies and customer satisfaction by enhancing customers' emotional and behavioral commitment to a brand (Hollebeek et al., 2014). While e-business strategies—such as personalized marketing, omnichannel experiences, and digital interactions—improve convenience and service quality (Chatterjee et al., 2020), their effectiveness largely depends on how engaged customers are with these digital platforms (Pansari & Kumar, 2017). Empirical evidence suggests that higher levels of customer engagement amplify the positive effects of e-business strategies on customer satisfaction. Alalwan et al. (2018) found that engaged customers are more likely to appreciate and utilize AI-driven recommendations and interactive e-commerce experiences, leading to greater satisfaction. Similarly, Van Doorn et al. (2017) highlighted that brand fostering high customer engagement through social media interactions, loyalty programs, and digital communities experience stronger customer retention and satisfaction. Furthermore, self-determination theory (Deci & Ryan, 2000) explains that engaged customers derive intrinsic value from participatory and interactive digital experiences, which enhances the impact of e-business strategies. Therefore, businesses that encourage active customer participation in digital platforms can maximize the benefits of their e-business initiatives, leading to higher satisfaction and brand loyalty. Based on this discussion, the following hypothesis is proposed:
H3: Customer engagement positively moderates the relationship between e-business strategies and customer satisfaction.

3. Methodology

3.1 Research Design

This study adopts an explanatory research design, which is appropriate for identifying and analyzing cause-and-effect relationships among variables. Explanatory design focuses on explaining patterns and associations by determining how one variable influences another (Creswell & Creswell, 2018). It goes beyond merely describing phenomena to investigating the underlying mechanisms and interactions that govern the relationships among variables. The choice of an explanatory design is particularly suitable for studies aimed at hypothesis testing and theory validation. It allows the researcher to use statistical techniques to examine whether changes in independent variables significantly affect dependent variables, and to what extent (Saunders, Lewis, & Thornhill, 2019). For instance, in this study, the explanatory design helps in determining how factors such as technological integration, supply chain practices, or employee competencies influence firm performance.

3.2 Research Philosophy

The research was guided by the positivist philosophy, which posits that reality is objective and can be measured through observable phenomena. The positivist paradigm supports the use of quantitative methods and emphasizes rigor, objectivity, and replicability. It is suitable for studies seeking to test theories and analyze empirical data. The positivist research philosophy is grounded in the belief that reality is objective, observable, and independent of human perception. It emphasizes the use of empirical evidence and scientific methods to test hypotheses and draw generalizable conclusions (Creswell & Creswell, 2018). Positivism asserts that knowledge is derived from observable phenomena and measurable facts rather than subjective interpretations.
In positivist research, the role of the researcher is detached and neutral, aiming to minimize personal bias during data collection and analysis (Saunders, Lewis, & Thornhill, 2019). This approach typically employs quantitative methods, such as surveys and structured questionnaires, which allow for the collection of numerical data that can be statistically analyzed. Through this, the researcher can identify patterns, test relationships between variables, and predict outcomes with a high level of reliability. Positivism is appropriate for studies that seek to establish causal relationships and validate existing theories. For instance, in business or

management research, it enables the researcher to test how organizational practices, employee behavior, or technological interventions impact firm performance (Sekaran & Bougie, 2020).

3.3 Sampling Technique

This study adopts the convenience sampling method due to its practicality and efficiency in collecting data from a targeted group within a limited timeframe. Specifically, bank staff involved in e-business services—such as digital banking managers, frontline staff, and IT personnel—who are readily accessible and willing to complete the questionnaire form the primary respondents. Their accessibility within the banking premises and their direct involvement in the subject matter make them ideal for providing relevant and insightful data (Creswell & Creswell, 2018). This was used to select 260 respondents.

3.4 Source of Data

The study utilized primary data, which were obtained directly from the respondents through structured questionnaires. This ensured the collection of firsthand and context-specific information relevant to the research objectives. This study relies on primary data as the main source of information for examining the factors influencing the implementation and performance of e-business services within the banking sector. Primary data refers to original information collected firsthand by the researcher specifically for the purpose of the study (Creswell & Creswell, 2018). It is considered more reliable and tailored to the research objectives because it directly reflects the perspectives, behaviors, and experiences of the target population

4. Analysis and Discussion of Results

4.1 Reliability and Validity

To ensure the quality and trustworthiness of the research findings, both reliability and validity were rigorously considered. Reliability refers to the consistency and stability of the measurement instrument over time. In this study, internal consistency reliability was assessed using Cronbach's alpha, a statistical measure commonly used to determine the reliability of survey instruments. A Cronbach's alpha value of 0.70 or above is generally considered acceptable for social science research (Tavakol & Dennick, 2011). The constructs measured in this study recorded alpha values ranging from 0.72 to 0.89, indicating strong internal consistency. Validity, on the other hand, refers to the degree to which the instrument measures what it is intended to measure. Content validity was ensured through expert review of the questionnaire items, confirming that each item was relevant and clearly aligned with the research objectives. Additionally, construct validity was established using factor analysis to verify that the items grouped together as expected based on theoretical constructs (Hair et al., 2019). This process confirmed that the indicators accurately captured the underlying variables, thereby strengthening the overall credibility of the results. Together, the reliability and validity tests confirm that the data collection tool was both dependable and appropriate for analyzing the research problem.

Table 1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.806
Bartlett's Test of Sphericity	Approx. Chi-Square	1359.664
	df	45
	Sig.	.000

Table 2 Reliability and Validity Results

Constructs	Cronbach's Alpha	Convergent Validity (AVE)	Discriminant Validity	Composite Reliability
E-Business Strategies	.750	0.737	0.858	0.977
Customer Satisfaction	.812	0.703	0.838	0.968
Customer Engagement	.863	0.783	0.885	0.976

Table 3 Factor Loadings

Items	Loadings	Items	Loadings	Items	Loadings
EBS1	.872	CSS1	.729	CEG1	.703
EBS2	.708	CSS2	.814	CEG2	.858
EBS3	.865	CSS3	.772	CEG3	.852
EBS4	.818	CSS4	.942	CEG4	.929

EBS5	.950	CSS5	.829	CEG5	.765
EBS6	.792	CSS6	.818	CEG6	.870
EBS7	.899	CSS7	.971	CEG7	.823
EBS8	.803	CSS8	.737	CEG8	.757
EBS9	.968	CSS9	.848	CEG9	.809
EBS10	.879	CSS10	.746	CEG10	.734
EBS11	.886	CSS11	.984	CEG11	.876
EBS12	.713	CSS12	.859	CEG12	.987
EBS13	.814	CSS13	.765	CEG13	.924
EBS14	.949	CSS14	.867	CEG14	.870
EBS15	.912				

To ensure the robustness of the measurement model, the construct validity, reliability, and factor structure were assessed using multiple statistical criteria. These included the Kaiser-Meyer-Olkin (KMO) measure, Bartlett's Test of Sphericity, Cronbach's Alpha, Composite Reliability, Average Variance Extracted (AVE), and Factor Loadings. As shown in Table 1, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.806, which exceeds the commonly accepted threshold of 0.70 (Kaiser, 1974). This result suggests that the data is appropriate for factor analysis. Furthermore, Bartlett's Test of Sphericity was significant ($\chi^2 = 1359.664$, df = 45, $p < 0.001$), indicating that correlations among variables were sufficiently large for principal component analysis (Hair et al., 2019). Together, these findings provide empirical support for the factorability of the correlation matrix and the suitability of the dataset for exploratory and confirmatory factor analysis.

Table 2 presents the internal consistency measures for the three constructs: E-Business Strategies, Customer Satisfaction, and Customer Engagement. All Cronbach's Alpha values were above the acceptable minimum threshold of 0.70 (Nunnally & Bernstein, 1994), with the highest being 0.863 for Customer Engagement. These values indicate high internal consistency, suggesting that the items within each construct reliably measure the same latent concept. Additionally, Composite Reliability (CR) values ranged from 0.968 to 0.977, far exceeding the recommended cutoff of 0.70 (Fornell & Larcker, 1981). This supports the conclusion that the latent constructs are measured reliably and consistently by their observed variables. Convergent validity assesses the extent to which indicators of a construct converge or share a high proportion of variance. All constructs achieved Average Variance Extracted (AVE) values above the 0.50 threshold (Fornell & Larcker, 1981), with the highest AVE recorded for Customer Engagement (0.783). These results indicate adequate convergent validity, affirming that a substantial proportion of the variance in the items is explained by the latent construct.

The square roots of the AVEs (as shown in the Discriminant Validity column of Table 4.2.1) were higher than the inter-construct correlations (though not shown explicitly), which satisfies the Fornell-Larcker criterion for discriminant validity. For instance, the discriminant validity value for E-Business Strategies was 0.858, which exceeds its AVE of 0.737, indicating that the construct is empirically distinct from the others. Table 4.2.2 shows that all individual item loadings were above 0.70, the standard threshold for indicator reliability (Hair et al., 2019). Notably, some loadings were extremely high (e.g., CSS11 = 0.984, CEG12 = 0.987), suggesting very strong relationships between observed variables and their respective latent constructs. Even the lowest loadings (e.g., EBS2 = 0.708, CSS1 = 0.729, CEG1 = 0.703) were within the acceptable range, reinforcing the validity of the measurement items. The results of the KMO and Bartlett's tests, along with the reliability and validity assessments, provide strong empirical evidence that the measurement model is statistically sound. The constructs demonstrate reliability, convergent validity, and discriminant validity, establishing a solid foundation for further structural equation modeling (SEM) and hypothesis testing.

Table 4 Hypothesis Testing and Findings

Hypothesis	Relationship	Beta value	T value	P value	Decision
H1	EBS - ->CSS	.489	9.678	.000	Supported
H2	CEG - ->CSS	.645	14.573	.000	Supported
H3	CEG* EBS - ->CSS	.1070	10.4008	.0000	Supported

4.2 Discussion of Results

The findings from Table 4.8 provide strong empirical support for the positive effect of E-Business Strategies (EBS) on Customer Satisfaction (CSS). The regression results indicate a statistically significant positive relationship ($\beta = .684$, $p < .001$), with an R^2 of .416, suggesting that EBS explains approximately 41.6% of the variance in customer satisfaction. This affirms that the deployment of effective e-business strategies—such as seamless digital interfaces, online customer service, personalized offerings, and mobile optimization—substantially enhances customer perceptions and experiences.

This result aligns with previous literature asserting that digital transformation efforts enhance service quality, responsiveness, and convenience, which in turn lead to greater customer satisfaction (Laudon & Traver, 2021). E-business strategies allow firms to streamline operations and provide value-added services, increasing customer engagement and trust (Ainin et al., 2015). Moreover, the increased accessibility and responsiveness of digital platforms meet customers' expectations for instant and personalized service, a key driver of satisfaction in the digital age (Chaffey, 2019). The positive beta coefficient in the regression model confirms that as organizations improve their e-business strategies, customer satisfaction increases proportionally. This is particularly significant in competitive markets where digital experiences often differentiate brands. Therefore, businesses that invest in robust e-business infrastructures are likely to enjoy not only improved operational efficiency but also higher levels of customer satisfaction and loyalty.

The analysis presented in Table 4.8 reveals a significant positive effect of Customer Engagement (CEG) on Customer Satisfaction (CSS), with a standardized coefficient of $\beta = .645$ and a highly significant p-value ($< .001$). The model explains 41.6% of the variation in customer satisfaction, indicating that engaged customers are more likely to be satisfied with the products and services offered. This finding aligns with existing literature that emphasizes the crucial role of customer engagement in driving satisfaction through emotional connection, active participation, and two-way communication (Brodie et al., 2011; Hollebeek et al., 2014). Customer engagement encompasses cognitive, emotional, and behavioral dimensions that foster a deeper brand relationship. When customers feel valued and included—by sharing feedback, interacting through social media, or participating in loyalty programs—they develop a stronger sense of trust and satisfaction (Vivek et al., 2012). Engaged customers are not only more informed but also perceive higher value in their interactions, which contributes to a more fulfilling experience and greater satisfaction (Islam & Rahman, 2016). This positive relationship suggests that organizations should focus on creating interactive, meaningful, and personalized engagements to enhance satisfaction levels. By building customer communities, encouraging feedback, and maintaining open channels of communication, businesses can foster sustained satisfaction and loyalty in a competitive environment.

The results of the moderation analysis indicate that Customer Engagement (CEG) significantly strengthens the relationship between E-Business Strategies (EBS) and Customer Satisfaction (CSS), as shown in Table 4.9. The interaction term (EBS × CEG) is statistically significant ($\beta = 1.1125$, $p < .001$), and the model explains 52.48% of the variance in customer satisfaction, a substantial increase from the direct effect models. This implies that the impact of e-business strategies on customer satisfaction is more pronounced when customers are highly engaged. This finding aligns with the view that customer engagement acts as a catalyst in the value creation process. According to Hollebeek et al. (2014), engaged customers are more likely to derive satisfaction from digital platforms because they are cognitively and emotionally involved in the brand experience. E-business tools—such as personalized recommendations, seamless digital interfaces, and real-time support—are more effective when users are already interacting with and invested in the brand. As Brodie et al. (2011) argue, engagement fosters a sense of co-creation, wherein customers perceive themselves as active contributors to their experiences, thereby enhancing satisfaction.

From a strategic perspective, this highlights the need for firms not only to implement advanced e-business systems but also to actively foster engagement through interactive content, feedback loops, and community-building efforts. The moderating effect demonstrates that technology alone is insufficient; it is the quality of customer involvement that amplifies digital strategies into meaningful satisfaction outcomes.

5. Managerial Implication

The findings of this study offer practical and strategic guidance for managers aiming to enhance customer satisfaction through digital transformation. Firstly, the moderate yet positive influence of E-Business Strategies indicates that organizations should continue investing in digital technologies such as user-friendly websites, mobile apps, personalized online services, and efficient e-commerce systems. These initiatives not only streamline business processes but also improve customer experience and satisfaction. More importantly, the stronger effect of Customer Engagement on satisfaction suggests that managers must go beyond technological upgrades and prioritize strategies that actively involve customers. This includes leveraging social media for two-way communication, offering loyalty programs, encouraging customer feedback, and fostering brand communities. Engaged customers are more likely to be loyal, offer valuable insights, and advocate for the brand. Furthermore, the significant moderating role of Customer Engagement highlights the need for an integrated approach. E-business strategies alone are not sufficient; their impact is significantly amplified when customers are deeply involved. Managers should therefore design digital initiatives that encourage participation, interaction, and emotional connection with the brand. In essence, to maximize customer satisfaction, businesses must align their digital strategies with active engagement initiatives. This dual focus will not only strengthen customer relationships but also provide a competitive edge in the increasingly digital marketplace.

5.5 Theoretical Implication

This study contributes to the theoretical understanding of customer satisfaction within the context of digital business environments by integrating E-Business Strategies and Customer Engagement into a unified model. The findings affirm and extend existing theories in digital marketing and relationship management by demonstrating that both technological capability and relational dynamics are vital to fostering customer satisfaction. First, the positive relationship between E-Business Strategies and Customer Satisfaction reinforces resource-based and technology acceptance perspectives, suggesting that strategic deployment of digital tools can enhance customer value creation. This supports the idea that technological resources are a source of competitive advantage when aligned with customer needs. Second, the stronger influence of Customer Engagement on satisfaction strengthens the foundation of relationship marketing theory, emphasizing that customer satisfaction is not merely a function of service delivery, but also of interactive and emotional connections. The high beta coefficient underscores the importance of affective and behavioral dimensions of engagement as pivotal constructs in satisfaction modeling.

Most notably, the significant moderating effect of Customer Engagement on the link between E-Business Strategies and Customer Satisfaction introduces a nuanced layer to existing models. It suggests that engagement functions as a contingent variable, enhancing the effectiveness of technological strategies. This aligns with the contingency theory of management, which posits that organizational outcomes are dependent on the fit between internal strategies and external variables—in this case, customer participation. Thus, this study theoretically integrates digital innovation and customer engagement, suggesting that satisfaction in the digital age is a co-created outcome, driven by both firm capabilities and active customer involvement. It provides a robust foundation for future research to explore the interplay between digital strategy, engagement behaviors, and customer-centric outcomes in varied contexts.

5.6 Recommendations

Organizations should prioritize the development and continuous improvement of their digital infrastructure. This includes user-friendly websites, seamless mobile applications, secure online payment systems, and personalized digital services. The finding that E-Business Strategies account for 23.9% of the variance in customer satisfaction underscores the importance of adopting advanced technological solutions to meet evolving customer expectations. Companies should use engagement data (such as click rates, time spent on platforms, and interaction frequency) to personalize customer experiences. Dynamic and responsive digital content, tailored offers, and targeted communication can create a sense of relevance and connection, thereby driving satisfaction. Organizations should implement feedback mechanisms and key performance indicators (KPIs) to track the effectiveness of their e-business and engagement initiatives. Regular analysis will enable them to adapt to changing customer behaviors and technological trends, ensuring sustained customer satisfaction.

5.7 Limitations and Suggestions for Future Studies

The data collected in this study were cross-sectional, capturing customer perceptions at a single point in time. This design limits the ability to assess causal relationships over time. Longitudinal studies that track customer satisfaction and engagement over a longer period would provide a deeper understanding of how E-Business Strategies and Engagement evolve and influence customer satisfaction in the long run. Future research could expand the scope by including additional factors that influence customer satisfaction, such as service quality, personalization, and customer trust. These variables could provide a more comprehensive view of what drives satisfaction in the digital environment. Conducting longitudinal studies would allow researchers to examine how changes in E-Business Strategies and Customer Engagement impact Customer Satisfaction over time. This approach could help identify trends, causal relationships, and long-term effects that cross-sectional studies cannot capture.

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