

Influence of Digital Innovation on Consumer Engagement: An Insight from Emerging Economy's Entrepreneur

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Received: 2026-04-18; Accepted: 2026-06-18; Published: 2026-07-01

Abstract

This study's context aligns with aspirations of SDG 9, one of the UN's 17 SDGs. This goal 9 advocates innovation. Before this research, there were limited empirical explorations that combined digital innovation and customer engagement. Especially in emerging economies. Hence, this paper is needed to bridge a gap created by limited empirical insights on DI (Digital Innovation = X) and CE (Consumer Engagement = Y). This paper applies a survey research design. Using the census, study population (107) constitutes sample size for this study. Copies of structured questionnaire (107) sent out were all recovered and valid. Using descriptive and inferential statistics (SPSS 26), analyses of data went smoothly. Multiple regression analyses demonstrate positive and significant influences of SEO (Search Engine Optimisation = x1), PPCA (Pay-Per-Click-Advertising = x2), SMM (Social Media Marketing = x3), and CM (Content Marketing = x4) on CE, respectively. Therefore, H1, H2, H3, & H4 were respectively supported. Findings from this study imply that digital innovation are not merely promotional tools but strategically required for consumer engagement. This underscores veritable need for innovative and technologically driven digital contexts to strengthen competitive advantage in an evolving economy. This investigation earns novelty as it addresses longstanding issue of insufficient insight into innovative digital-related and customer engagement issues that threaten retail entrepreneurs in emerging economies.

Keywords: *Digital; Innovation; Customer; Engagement; Emerging.*

1. Introduction

Innovative technology is required in all emerging economies. Particularly, in Nigerian context. There are many studies on technological innovations and product performance, process performance, employee performance, product quality, and product attractiveness. However, exploration of digitally inclined technological innovation and consumer engagement has not been adequately pursued. This low exploration is having negative effects on entrepreneurs from emerging economies. Moreover, in Nigerian context. Limited exploration is having an inverse effect because there are no robust recommendations to guide policy formulation, implementation, evaluation, and control. This is a crucial issue and gap that cannot continue to linger indefinitely. An economy cannot witness desirable progress if entrepreneurs

are running without having an appropriate policy framework that emanates from empirical research recommendations. Apparently, growth and sustainability of entrepreneurs translates to national growth. Entrepreneurs create jobs. The more jobs that are available, the fewer idle hands, less insecurity, and banditry. Besides, governments earn more revenue in form of taxes from workers when many citizens are fully engaged.

Accordingly, without customers, no organisation can survive. Deployment of technology-based innovation for organisations' efficient engagement of customers, to enhance delivery of products and services, has become a welcome development. Apparently, a gap has been identified. In response, this study aims to address this gap. This resolution agrees with the UN's SDG 9 advocacy of innovation as a parameter for business sustainability. This is the first time that a study explores technological innovation and customer engagement to validate SDG 9, which drives the sustainability of entrepreneurial enterprise, in an emerging economy. Here lies the novelty of this research.

1.1 Hypotheses Development

1.1.1 Search Engine Optimisation and Consumer Engagement

Technological innovation brought search engine into existence. Scholars have continued attempts to offer insights on SEO. A digital innovation such as SEO generates traffic, which has been linked to more consumer interactions (Asante et al., 2022). SEO has potential to enhance customers' trust, it may increase their trust and willingness to interact with a brand. This trust forms a foundation for long-term engagement, as consumers tend to return to websites that provide credible and relevant information without overt promotional intent (Asante et al., 2022). Technical elements of SEO, such as site speed, mobile optimisation, and keyword relevance, contribute significantly to user experience, which in turn affects engagement levels (Drivas et al., 2021). When users find a website easy to navigate and quick to load, they are more likely to spend time exploring its content, increasing session duration and lowering bounce rates. These behavioural metrics are key indicators of consumer engagement and are directly influenced by a site's SEO (Drivas et al., 2021). Additionally, well-structured SEO innovation not only improves website traffic but also aligns website's content with consumer intent, increasing likelihood of engagement (Al-Haraizah et al., 2025). When content matches what users are searching for, it creates a more meaningful connection and encourages them to take further actions such as subscribing, sharing, or making purchases (Al-Haraizah et al., 2025). However, SEO must be strategically implemented, as algorithmic precision does not always guarantee increase in engagement (Zhou et al., 2024). In some cases, overly precise search algorithms may limit exposure to diverse content, reducing serendipitous discovery and broader engagement. Therefore, balancing precision with variety is essential in SEO practices to sustain consumer interest (Zhou et al., 2024). In view of the above perceptions on digital innovation regarding SEO, which agrees with SDG 9, a hypothesis for this research is formulated, thus: H1: SEO has a significant influence on CE.

1.1.2. Pay-Per-Click Advertising and Consumer Engagement

Technological innovation facilitates (PCC). PPC plays a role in continuous engagement, especially when combined with target innovation that reminds consumers of previously viewed products or services (Rezaei et al., 2024). Moreover, repeated exposure reinforces brand recall and increases chances of return visits and conversions, demonstrating how PPCA can sustain engagement beyond an initial click (Rezaei et al., 2024). Consumer engagement is further enhanced when PPC campaigns are integrated with other online marketing tools, such as email marketing and social media campaigns (Kumar et al., 2025). These integrated innovations create a consistent brand experience across multiple touchpoints, encouraging deeper and prolonged interactions (Rezaei et al., 2024). Similar findings were reported by Eze et al. (2020) and Anjorin et al. (2024). Drawing insight from those illuminations above on digital innovation about PPCA, which aligns with SDG 9, a hypothesis for this study is formulated, thus: H2: PPCA has a significant influence on CE.

1.1.3. Social Media Marketing and Consumer Engagement

Technological innovation has paved way for springing up of social media platforms. Accordingly, social media has become useful for entrepreneurial purposes. Social media marketing (SMM) carries strategic content that aligns with audience values and emotions, which is more likely to be perceived as authentic and engaging (Adamu et al., 2025). Also, rise of AI influencers has enhanced SMM and introduced a new dynamic in consumer engagement on social platforms. These digital personas simulate human-like interactions, generating curiosity and engagement from users, especially in non-luxury brand contexts (Gerlich, 2023). More so, novelty and consistency of AI-generated content can create sustained consumer interest and interaction (Gerlich, 2023). Related findings were conveyed by (Okpighie & Ogundare, 2020; Adamu et al., 2021; Egbe et al., 2023). In view of the foregoing awareness on digital innovation concerning SMM, which concurs with SDG 9, a hypothesis for this exploration is formulated, thus: H3: SMM has a significant influence on CE.

1.1.4. Content Marketing and Customer Engagement

Technological innovation provides platform for content marketing (CM). Customer engagement is enhanced when content is tailored to preferences and behaviours of specific audience segments (Prasetya & Susilo, 2022). For example, engaging social media posts, blog articles, and video content can all be used to stimulate interaction and discussion among consumers (Prasetya & Susilo, 2022). This interaction not only strengthens connection between brand and customer but also enhances brand recall and loyalty. CM played a vital role in maintaining customer engagement, particularly as lots of consumers shifted to online platforms for information and shopping since outbreak of COVID-19 (Febrian et al., 2021). Brands that provided empathetic, informative, and entertaining content were able to sustain their relationship with customers despite physical distancing and reduced in-store interactions (Febrian et al., 2021). Moreover, customer engagement creates a participatory environment that deepens emotional ties and promotes continued interaction (Carolin et al., 2020). Moreover, creation of shared value through content encourages consumers to become brand advocates, further amplifying engagement (Carolin et al., 2020). Given those templates above on digital innovation concerning CM, which corresponds with SDG 9, a hypothesis for this investigation is formulated, thus: H4: CM has a significant influence on CE.

1.1.5. Theoretical Anchor: Stimulus–Organism–Response (S-O-R)

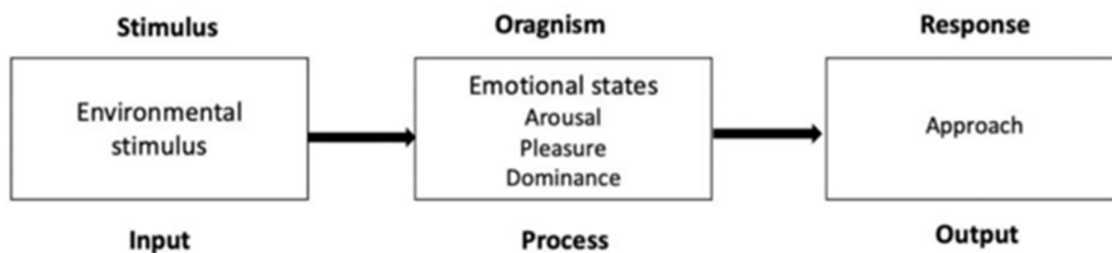


Fig. 1: Stimulus–Organism–Response (Chi et al., 2022)

This exploration is anchored with S-O-R. Two authors (Mehrabian & Russell, 1974) proposed S-O-R. Earlier investigators had explored S-O-R in Technological Innovation (TI) related papers. Insights from such extant scholars underscore relevance of anchoring this study with S-O-R. Moreover, digital marketing research frequently draws on S-O-R to explain how external cues—such as online ads or personalized recommendations—trigger internal consumer states (cognitive and affective), which then motivate engagement behaviours (Mehrabian & Russell, 1974). S-O-R model posits that stimulus in a digital environment influences consumer’s emotional and cognitive responses (Dalvi-Esfahani et al., 2025). Hence, ultimately shaping responses, namely approach or avoidance actions (Dalvi-Esfahani et al., 2025). Some authors who had explored S-O-R in Technological Innovation (TI) related studies include Yadav et al. (2022), and Dalvi-Esfahani et al. (2025). These authors respectively examined generative AI, and technology trust.

2. Methodology

This research utilises a Structured Google Forms Questionnaire (SGFQ), by which it gathers standardised data on respondents' exposure to Jumia's digital exploration channels and their subsequent engagement behaviours. Jumia is an online retail entrepreneur, situated in Lagos, Nigeria. Jumia is selected as case for this study, because it is an indigenous start-up enterprise in Nigeria that has been surviving regardless of unfavourable business environment that characterises an emerging economy like Nigeria. Population for this study is 107 (this is comprised of individuals who have made repeat purchases of Jumia's products via any of the innovative digital interfaces facilitated by technology, between October 1, 2025, and March 31, 2026). Repeat purchase in this context refers to patronage from a customer, counting up to seven times, within the time frame indicated. In Nigeria, online engagement of customers has not enjoyed wide popularity. In view of this, scope of this study is Lagos, where we have elites, though most individuals in this category are not necessarily adherents of technologically innovative digital platforms for online purchase. So, it's not surprising that population is not large. Accordingly, a census approach is adopted (entire 107 serves as a sample for this exploration). A census method is applicable when a study's population is below 200 (Asenahabi & Ikoha, 2023). SGFQ has section A (carrying demographic data), section B (comprising items/proxies for determinants of independent variables), and section C (comprising dependent variable). Section A is meant for descriptive analyses. Sections B & C are meant for inferential analyses. This study adopts a Likert scale. Strongly Agree is represented with SA. Agree is represented with A. Disagree is represented with D. Strongly Disagree is represented with SD. These are justified as other researchers (Al-Haraizah et al., 2025) had sectioned their research instrument to facilitate both descriptive and inferential analyses. For this study, questionnaire items were developed with a blend of insight from extant literature. All questions were checked for validity and reliability. Accordingly, a pilot study was explored; experts in industry and academics were involved, resulting in effecting necessary adjustments.

In any study, validity has to do with capacity of a questionnaire to accurately measure what it is intended to measure. To ensure accuracy, contents of questionnaire for this study were subjected to experts' clarification, both in industry and academic. Following repeated scrutiny, each variable for this study has a Cronbach's Alpha (CA) that is higher than 0.7. Notably, CA is one of A measures of reliability that consistently gain popularity in scientific research. CA's scores characteristically range from 0 to 1. An acceptable score starts from 0.7. In clearer terms, a score of 0.7 or higher is generally considered acceptable and reliable. Links to Google Forms survey were shared alongside a brief introduction explaining purpose of this research. To enhance participation, reminder messages were sent to respondents. This study employs both descriptive and inferential data analyses. Respondents participated freely without any form of interference from researchers. These are acceptable as other researchers (Eze et al., 2020; Rezaei et al., 2024) have applied the above context in their respective studies.

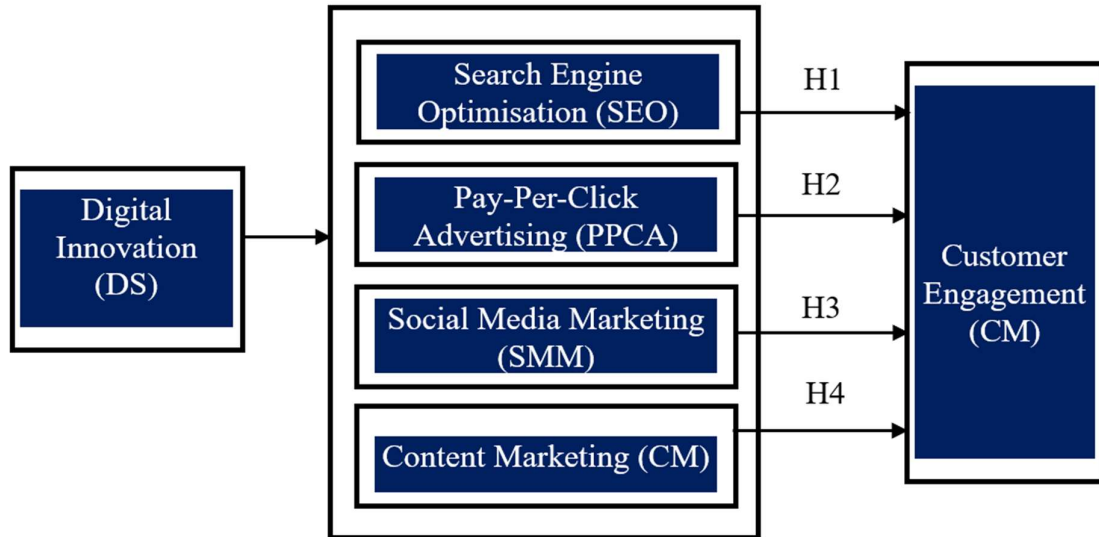


Figure 1. Conceptual diagram

2.1. Research design and participant selection

Every empirical study has to be analysed, and every analysis needs to be guided by specific model. Accordingly, this empirical paper requires analyses. Therefore, analyses involved in this paper are guided by multiple regression as specified below:

$$Y = f(X) \quad (1)$$

Where $X = x_1, x_2, x_3, x_4$, $x_1 = \text{SEO}$, $x_2 = \text{PPCA}$, $x_3 = \text{SMM}$, $x_4 = \text{CM}$, Where $Y = \text{CE}$

Hence,

$$\text{CE} = B_0 + B_1\text{SEO} + B_2\text{PPCA} + B_3\text{SMM} + B_4\text{CM} + \varepsilon \quad (2)$$

Where: CE = Customer Engagement, SEO = Search Engine Optimisation, PPCA = Pay-Per-Click Advertising, SMM = Social Media Marketing, and CM = Content Marketing, B_0 = Constant and $B_1, B_2, B_3,$ & B_4 = Respective Coefficients, and ε = Error term. Multiple regression is widely used because real-world outcomes are rarely influenced by just one factor.

Table 1 shows the respondents' data. The highest age frequency (47) falls in the 25-34 years age group, and the lowest age frequency (5) falls within 55 and above. Accordingly, 102 respondents (aged 15 to 54 years) constitute a higher percentage (95.3%) of respondents. Indicating that a greater percentage was in agile age brackets. Female respondents were 58, while males were 49. So, females constitute a higher percentage (54.2%) of respondents. This reflects the absence of bias against the female gender. A majority (94%) of respondents were married. Suggesting that, most of those respondents engaged were responsible persons. More so, 16 (0.61%) of the participants had a B.Sc. or HND. However, every participant is educated enough to offer an objective response. Apparently, Table 1 contains descriptive statistics (DS). In essence, DS offers clarification on demographic characteristics of participants in the study. As a convention, traceable identity of respective respondents has to be protected, particularly, names. Accordingly, this aspect is presented in accordance with expected standard globally.

Table 1. Respondents Data

Demographic Factors	Frequency	Percentage
Age of Participants		
15-24 years	11	10.3
25-34 years	47	43.9
35-44 years	31	29.0
45-54	13	12.1
55 and above	05	04.7
Total	107	100
Gender of Participants		
Female	58	54.2
Male	49	45.8
Total	107	100
Marital Status		
Single	13	43.71
Married	94	56.29
Total	107	100
Participants' Qualification		
SSCE	05	27.54
OND/NCE	32	28.14
B. Sc/HND	54	43.71
M. Sc/MBA	16	0.61
Others	-	-
Total	107	100

Table 2 shows that 45.8% among participants strongly agreed that Jumia websites rank among top organic results when searching for products online, 39.3% agreed, 6.5% disagreed, while 8.4% significantly disagreed. Regarding whether respondents trust products more when they find them via Jumia's organic search listing; 41.1% strongly agreed, 38.3% agreed, 14% disagreed, while 7 6.5% strongly disagreed. On whether high search ranking makes respondents more likely to click and explore Jumia's site; 36.4% strongly agreed, 45.8% agreed, 6.5% disagreed, while 11.2% strongly disagreed. This implies that majority of participants aligned with each item positively.

Table 2. Responses of participants on SEO

Responses on SEO			
Items	Options	Frequency	Percentage
Jumia's website is among top organic results in online searches for products. 36.4+45.8+6.5+11.2	SA	49	45.8%
	A	42	39.3%
	D	07	06.5%
	SD	09	08.4%
	Total	107	100%
Products located via Jumia's organic search listings are trusted.	SA	44	41.1%
	A	41	38.3%
	D	15	14.0%
	SD	07	06.5%
Total	107	100%	
Jumia's site ranks high in search and exploration.	SA	39	36.5%
	A	49	45.8%
	D	07	06.5%
	SD	12	11.2%
	Total	107	100%

In Table 3, responses of participants on PPCA show that 38.3% strongly agreed noticing Jumia's adverts, 43.9% agreed, 10.3% disagreed, while 7.5% strongly disagreed, meaning that most respondents are aware of Jumia's adverts. Furthermore, 33.6% strongly agreed that Jumia's paid search ads usually match

their product needs, 37.4% agreed, 17.8% disagreed, 11.2% strongly disagreed, implying that most respondents find those adverts relevant. Moreover, 30.8% of respondents strongly agreed that clicking on Jumia's paid adverts has led them to make a purchase of a product, 43.0% agreed, 15.9% disagreed, while 10.3% strongly disagreed.

Table 3. Responses of participants on PPCA

Responses on PPCA			
Items	Options	Frequency	Percentage
Jumia's paid adverts (ads) appear when a search is made for products online.	SA	41	38.3%
	A	47	43.9%
	D	11	10.3%
	SD	08	07.5%
	Total	107	100%
Jumia's paid search ads, i.e., Google, Bing, etc., usually match my product needs.	SA	36	33.6%
	A	49	37.4%
	D	10	17.8%
	SD	12	11.2%
	Total	107	100%
Clicking Jumia's paid ads facilitates product purchase.	SA	33	30.8%
	A	46	43.0%
	D	17	15.9%
	SD	11	10.3%
	Total	107	100%

Evidence in Table 4 concerning responses of participants on CM items shows that 43.0% strongly agreed that Jumia's blogs, articles, or guides help them make better purchasing decisions, 40.2% agreed; while 11.2% disagreed, and 5.6% strongly disagreed. So, we deduce that sizable respondents find Jumia's CM helpful in guiding their buying choices. Observably, 29.9% strongly agreed that email newsletters from Jumia provide useful and relevant information, while 47.7% agreed.

Table 4. Responses of participants on CM

Responses on CM			
Items	Options	Frequency	Percentage
Jumia's blogs, articles, or guides help me make better purchasing decisions	SA	46	43.0%
	A	43	40.2%
	D	12	11.2%
	SD	06	05.6%
	Total	107	100%
Email newsletters from Jumia provide useful and relevant information.	SA	32	29.9%
	A	51	47.7%
	D	15	14.0%
	SD	09	08.4%
	Total	107	100%
Jumia is trusted in sharing helpful tips and product reviews	SA	37	34.6%
	A	47	43.9%
	D	14	13.1%
	SD	09	08.4%
	Total	107	100%

However, 14.0% disagreed, and 8.4% strongly disagreed. This suggests that most participants perceive Jumia's email communication as valuable, though a small portion remain unconvinced. More so, 34.6% strongly agreed that they trust Jumia more when it shares helpful tips and product reviews, 43.9% agreed. However, 13.1% disagreed, and 8.4% strongly disagreed. This reflects that informative content positively influences trust in Jumia's brand for most users.

Table 5. Responses of participants on SMM

Responses on SMM			
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Items	Options	Frequency	Percentage
Following Jumia on social media platforms is pleasing.	SA	34	31.8%
	A	54	50.5%
	D	09	08.4%
	SD	10	09.3%
	Total	107	100%
Jumia's social media posts (interesting visuals and offers) catch my attention.	SA	33	30.8%
	A	39	36.4%
	D	22	20.6%
	SD	13	12.2%
	Total	107	100%
Jumia's site ranks high in search and exploration.	SA	37	34.6%
	A	45	42.1%
	D	16	15.0%
	SD	09	08.4%
	Total	107	100%

In Table 5, responses of participants on SMM show that 31.8% strongly agreed that they follow Jumia on social media platforms, 50.5% agreed. However, 8.4% disagreed, and 9.3% strongly disagreed. This indicates that a significant majority of respondents actively follow Jumia's social media accounts. Moreover, 30.8% of participants strongly agreed that Jumia's social media posts catch their attention with interesting visuals or offers, while 36.4% agreed. However, 20.6% disagreed, and 12.1% strongly disagreed. This suggests that while most respondents find Jumia's social media content engaging, a small portion do not. Furthermore, 34.6% of participants strongly agreed that they interact with Jumia's social media (like, comment, share) regularly, 42.1% agreed. Meanwhile, 15.0% disagreed, and 8.4% strongly disagreed. This reflects that a majority of users are actively engaging with Jumia's social media content.

Table 6. Responses of participants on CE

Items	Responses on CE		
	Options	Frequency	Percentage
There is a high emotional connection to Jumia's brand.	SA	34	31.8%
	A	30	28.0%
	D	27	25.2%
	D	16	15.0%
	Total	107	100%
Jumia's social media posts are interesting and thus catch shoppers' attention.	SA	24	22.4%
	A	49	45.8%
	D	16	15.0%
	SD	18	16.8%
Total	107	100%	
Jumia protects shoppers' personal and payment information	SA	35	32.7%
	A	51	47.7%
	D	11	10.3%
	SD	10	09.3%
	Total	107	100%
Jumia's site is often revisited.	SA	39	36.4%
	A	47	43.9%
	D	12	11.2%
	SD	09	08.4%
	Total	107	100%
Jumia understands shoppers' preferences and needs.	SA	38	35.5%
	A	41	38.3%
	D	17	15.9%
	SD	11	10.3%
	Total	107	100%

In Table 6, participants' responses on CE show that 31.8% strongly agreed that they feel emotionally connected to Jumia brand, while 28.0% agreed. However, 25.2% disagreed, and 15.0% strongly

disagreed. This suggests that while a majority feel some emotional connection to this brand, some do not share that sentiment. Moreover, 22.4% of respondents strongly agreed that they are likely to recommend Jumia to friends or family, while 45.8% agreed. Meanwhile, 15.0% disagreed, and 16.8% strongly disagreed. This indicates that most respondents are willing to advocate for this brand, though there are oppositions. Furthermore, 32.7% of respondents strongly agreed that they trust Jumia to protect their personal and payment information, and 47.7% simply agreed. Nevertheless, 10.3% disagreed, and 9.3% strongly disagreed. This reflects a high level of trust in Jumia's data security practices among users. More so, 36.4% of respondents strongly agreed that they often revisit Jumia's site even without an immediate need to buy, and 43.9% agreed. Nonetheless, 11.2% disagreed, and 8.4% strongly disagreed. This suggests that Jumia's platform maintains strong user engagement beyond transactional visits. In addition, 35.5% of respondents strongly agreed that they feel Jumia understands their preferences and needs as a shopper, while 38.3% agreed. But 15.9% disagreed, and 10.3% strongly disagreed. So, most users feel this brand is responsive to their shopping behavior and expectations.

3. Results

Table 7. Results of regression

Predictors	B	Std. Error	Beta	t-statistics	Sig.
SEO	0.421**	0.066	0.301	6.325	0.000**
PPCA	0.151**	0.052	0.110	2.898	0.004**
SMM	0.160**	0.052	0.154	3.085	0.002**
CM	0.409**	0.036	0.450	11.254	0.000**
C	0.483				

Dependent variable: Customer Engagement (CE). **p<0.05

Exploring Table 7, the constant is 48.3 percent. This implies that without digital innovation, this firm can achieve up to 48.3 percent customer engagement. Further exploration of this Table demonstrates that SEO has a 42.1 percent positive influence on CE. More so, this influence is significant (p<0.05). Therefore, the statement of alternative hypothesis 1 (H1: SEO has a significant influence on CE) is supported. Furthermore, results indicate that PPCA had a 15.1 percent positive influence on CE. Also, the influence is significant (p<0.05). Hence, the statement of an alternative hypothesis 2 (H2: PPCA has a significant influence on CE) is supported. Moreover, outcomes indicate that SMM had a 16.0 percent positive influence on CE. This influence is significant (p<0.05). Thus, the statement of an alternative hypothesis 3 (H3: SMM has a significant influence on CE) is supported. Furthermore, results indicate that CM had a 40.9 percent positive influence on CE. It is a significant influence (p<0.05). Thus, the statement of an alternative hypothesis 4 (H4: CM has a significant influence on CE) is supported.

In view of the foregoing insights, both SEO, PPCA, SMM, and CM serve as predictors of CE. However, not in equal capacity. Starting with SEO, it predicts a 42.1 percent improvement in CE. Hence, SEO is a moderate predictor of CE. Concerning PPCA, it predicts a 15.1 percent improvement in CE. Therefore, PPCA is a weak predictor of CE. Looking at SMM, it predicts a 16.0 percent improvement in CE. Accordingly, SMM is also a weak predictor of improvement in CE. Regarding CM, it predicts a 40.9 percent improvement in CE. Therefore, CM is a fair predictor of CE.

4. Discussion

4.1. SEO and CE

This research found that SEO is a moderate, positive, and significant predictor of CE. Findings of this study corroborate objectives of SDG 9. Particularly, as relating to technological innovation. More so, outcome of this research is similar to report from Asante et al. (2022), who reported positive influence of SEO and psychological engagement on buyers' behavioral engagement. Besides, Drivas et al. (2021) found that SEO influences favourable disposition from buyers. Comparable, Al-Haraizah et al. (2025), reported that SEO influences purchase decisions of buyers. Similarly, Zhou et al. (2024) found that

“search algorithms play a critical role in matching buyers and sellers.” These insights underscore relevance of technological innovation in assisting entrepreneurs' practice of customer engagement for profitable patronage.

4.2. PPCA and CE

This investigation found that PPCA is a positive and significant predictor of CE, though in a weak capacity. Nevertheless, findings of this paper constitute insight that substantiates advocacy of SDG 9. Predominantly, as concerning technological innovation that backs PPCA. Moreover, result from this work are comparable to earlier findings presented by Eze et al. (2020). Their reports indicate that digital marketing devices minimize costs associated with searching for information. Also, Rezaei et al. (2024) claimed that “attitude toward PPC advertising significantly affects both continuous search and banking services intentions”. Likewise, Kumar et al. (2025) found that “AI-powered targeting, and hyper-personalization to improve customer engagement, brand visibility, and conversion rates”. These understandings emphasise significance of technological innovation in supporting entrepreneurs' practice of customer engagement, leading to cost-effectiveness and justifiable patronage.

4.3. SMM and CE

This study found that SMM is a positive and significant predictor of CE. Nonetheless, in a weak form. Findings of this study authenticate aims of SDG 9. Principally, as connected to technological innovation. These findings are analogous to discoveries obtained by Okpighe and Ogundare (2020), who reported that “Social media blogs, social networking sites, perceived usefulness and trust affect buying behavior of consumers “. Similarly, Anjorin et al. (2024) found that “SMM exerts a profound influence on consumer behavior”. Likewise, Adamu et al. (2021) empirically demonstrated that “active approach and engagement approach had a positive and significant relationship with online retail performance”. More so, Egbe et al. (2023) confirmed that customers' trust in online products significantly correlates with the purchasing behaviour of customers. Moreover, Gerlich (2023) reported that virtual influencers significantly determine customers' preferences and activate an increase in purchase intention. These observations highlight importance of technological innovation in aiding entrepreneurs' practice of customer engagement, enhancing success and maintainable patronage.

4.4. CM and CE

This enquiry found that CM is a fair, positive, and significant predictor of CE. Discoveries of this study validate aspirations of SDG 9. Mainly, as involving technological innovation. Moreover, findings of this paper align with findings from Febrian et al. (2021), as they asserted that CM had a significant effect on customer engagement. Similarly, in a study conducted in Java Island, Indonesia, Carolin et al. (2020) found that customers' intention to patronize an online travel agency is influenced by content of customer engagement. Likewise, Prasetya and Susilo (2022) showed that CM creates purchase intention through customer engagement. These intelligences accentuate weight of technological innovation in facilitating entrepreneurs' practice of customer engagement for reasonable patronage.

5. Conclusion

Findings of this research underscore digital innovation's influence on CE, which enhances managerial policy formulation for growth and survival of retail entrepreneurs. Conclusively, analyses revealed that SEO, PPCA, SMM, and CM significantly influenced CE. More so, these findings carry important implications, particularly in areas of development of upcoming retail entrepreneurs through policy support. Moreover, this study highlights necessity for practitioners to acquire hands-on expertise in areas such as content creation, data analytics, and campaign optimization (all of which are driven by innovative technology). Achievement of these could come through workshops and training sessions on usages of Google Ads, SEO, and SMM (these are products of innovative technology). This study has improved understanding of entrepreneurial usages of technological innovation in promoting customer engagement.

This exploration addresses research gap, for instance, it sensitizes policymakers to revisit their policy direction and mention to encourage usage of technological innovation context like SEO, to engage customers. This serves three (3) purposes:

- i. usage of SEO for engagement, facilitates interest of customers in becoming retained and loyal to products and services.
- ii. Entrepreneurs become stable and employ workers, thereby depleting idle hands, reducing incidence of insecurity and banditry.
- iii. Countries benefit from entrepreneurs' sustainability as governments generate income through taxation on workers.

More so, issue of scarcity of recommendations to assist entrepreneurs' decision-making is now minimised. Moreover, insight from this study consolidates veracity of the aspirations of SDG 9. To facilitate generalization of the findings of this study, other researchers in emerging economies are hereby encouraged to conduct related studies in the context of their respective countries.

Declarations

This study was not conducted with any grant or financial support from any know grant providing organization or funding institution.

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