

Evaluating the Strategic Effectiveness, Technology Integration, and Perceived Social Utility Value of Digital Marketing in the Seafood Industry of Surigao del Sur

Marinel E. Josol¹, Deborah Leah T. Denso¹, Joan Valery A. Espinosa¹, Roey C. Sumaoy^{2*}

¹Department of Industrial Technology, North Eastern Mindanao State University, Philippines

²Department of General Teacher Training, North Eastern Mindanao State University, Philippines

¹ORCID: <https://orcid.org/0009-0003-1646-7836> | Email: mejosol@nemsu.edu.ph

¹ORCID: <https://orcid.org/0009-0005-4330-9766> | Email: dltdenso@nemsu.edu.ph

¹ORCID: <https://orcid.org/0009-0008-1378-6387> | Email: jvaespinosa@nemsu.edu.ph

²ORCID: <https://orcid.org/0009-0004-8779-8840> | Email: rcsumaoy@nemsu.edu.ph

***Corresponding Author:** Roey C. Sumaoy | Email: rcsumaoy@nemsu.edu.ph

ABSTRACT

The digitalization of coastal commerce offers a transformative strategy for improving market reach and ensuring seafood traceability in resource-constrained environments. This study examined the strategic effectiveness, technology integration, and perceived social utility value of digital marketing among seafood business owners in Surigao del Sur, Philippines, through an embedded mixed-methods design. The quantitative component involved 25 seafood entrepreneurs utilizing digital platforms, while qualitative data were gathered from narrative responses regarding operational challenges and innovations. Results revealed high perceived effectiveness across digital constructs, particularly in Search Engine Optimization (AWM = 3.70) and Pay-Per-Click Advertising (AWM = 3.66). Inferential analysis further indicated that "Years in Operation" is a significant predictor of SEO performance ($r = .584$, $p = .002$), while platform diversification highly correlates with e-commerce strategy success ($r = .621$, $p = .001$). Qualitative findings revealed that while entrepreneurs face systemic "digital divide" barriers such as poor internet connectivity and limited budgets, they perceive blockchain-driven traceability and QR code integration as socially valuable tools for fostering consumer trust and ensuring food safety. Overall, the findings suggest that digital marketing functions not only as an effective promotional instrument for sales growth but also as a meaningful infrastructure for professionalizing the seafood industry and aligning local trade with the national development goals of AmBisyon Natin 2040.

Keywords: *Digital Marketing, Seafood Industry, Search Engine Optimization (SEO), Social Utility Value, E-commerce Adoption,*

1. INTRODUCTION

In the era of rapid technological advancement and the Fourth Industrial Revolution (4IR), digital marketing has emerged as a pivotal driver for the survival and competitiveness

of small and medium-sized enterprises (SMEs). The digitalization of global commerce has fundamentally altered consumer behavior, requiring businesses to transition from traditional brick-and-mortar operations to integrated, data-driven e-commerce models to maintain market relevance (Toala Parraga, 2025; Maddikunta et al., 2022; Sharabati et al., 2024). This shift is particularly evident in the food and agricultural sectors, where digital tools provide a vital platform for expanding market reach and improving supply chain efficiency in an increasingly automated world (Majumdar et al., 2025; Popoola et al., 2024). However, traditional industries, such as the local seafood trade, often struggle to adapt to these rapid changes due to the inherent complexity of managing perishable goods and the necessity of building digital trust within virtual marketplaces (Bolognini et al., 2023; Ayob 2021; Morales et al., 2022).

The seafood industry plays a critical role in the socio-economic landscape of the Philippines, serving as a primary source of livelihood and food security for millions in coastal regions. Modernizing this sector through digital adoption aligns with national and regional development plans, including *AmBisyon Natin 2040* and the Philippine Development Plan (PDP) 2023–2028, which prioritize innovation, digitalization, and an inclusive economy (Edralin & Pastrana, 2023; National Economic and Development Authority [NEDA], 2023). In the Caraga Region, specifically Surigao del Sur, the shift toward e-commerce and social media marketing is increasingly recognized as a means of improving business competitiveness and economic resilience (Lady et al., 2023). These digital frameworks allow local vendors to bypass traditional middlemen, theoretically increasing profit margins and providing consumers with fresher, more traceable products that meet international safety standards (Patel et al., 2023; Wickramasinghe & Wickramasinghe, 2025).

Despite the documented benefits of digital transformation in urban centers, its adoption in rural, resource-constrained seafood markets remains underexplored. Systemic challenges such as insufficient technological resources for product standardization, high costs of digital infrastructure, and a persistent "digital divide" often hinder the effective implementation of digital marketing strategies in provincial settings (Kunjiapu et al., 2025; Bon, et al., 2023). Furthermore, while technology acceptance models (TAM) have been widely applied in educational and pure e-commerce contexts, there is a lack of empirical evidence regarding how these tools function within the specific socio-technical ecosystem of the Philippine seafood industry (Nazaruddin et al., 2024; Villacorta & Arnado, 2023). Understanding the factors that drive digital effectiveness is essential for the sustainable integration of modern technologies into traditional coastal trades that face unique logistical barriers (Deniz Deral & Ipek 2024; Lucas Schafer et al., 2023).

Recent scholarship suggests that technology adoption alone does not fully explain why entrepreneurs remain engaged with digital tools or perceive them as meaningful beyond basic transactions. Drawing from the concept of Social Utility Value, researchers have begun to examine how digital tools contribute not only to individual economic success but also to the broader professional and societal goals of the community (Yi, 2025; Morales et al., 2022; Eze et al., 2024). Within the seafood sector, technologies such as blockchain and QR-driven traceability are evaluated not only for their technical efficiency but also for their ability to foster consumer trust and promote equitable access to markets (Ahmad & Hamid, 2025; Sheer, 2020). However, limited research has examined the "Perceived Social Utility Value" of digital marketing innovations within the Philippine seafood industry, particularly in regional settings where infrastructure constraints are most prominent (Adewolu, 2024; Sen et al., 2025).

For the aforementioned reasons, this study integrated selected digital marketing constructs specifically SEO, Content Marketing, and Traceability Innovations to evaluate the digital ecosystem of seafood business owners in Surigao del Sur. Employing an embedded mixed-methods approach, the study sought to: (1) profile the seafood business owners and their digital platform usage; (2) determine the perceived effectiveness of digital marketing

strategies across various constructs; (3) examine the significant relationships between business profiles and perceived marketing success; and (4) explore the operational challenges and social value generated through digital transformation. Based on existing evidence supporting technological intervention, the following null hypothesis was tested at $\alpha=0.05$: There is no significant relationship between business profiles and the perceived effectiveness of digital marketing strategies. This study sought to provide empirical evidence for the development of inclusive, technologically-driven strategies for enhancing the seafood industry globally (Autio et al., 2022; Jayalath et al., 2025).

2. MATERIALS AND METHODS

2.1 Research Design

This study utilized an embedded mixed-methods research design, wherein the quantitative component served as the primary method while a qualitative component was embedded to provide a deeper understanding of the empirical findings. The quantitative phase utilized a descriptive-correlational approach to evaluate the perceived effectiveness of digital marketing strategies among seafood entrepreneurs. Following the collection of survey data, a qualitative inquiry was conducted through thematic analysis of open-ended responses to explore the operational challenges and technological innovations within the sector. Integrating these two strands enabled the study to examine not only the statistical relationships between business profiles and marketing efficacy but also the broader meanings and "social value" entrepreneurs attached to digital transformation in Surigao del Sur, Philippines.

2.2 Participants and Locale

The participants of this study consisted of 25 seafood business owners ($n = 25$) actively engaged in the digital seafood industry within the province of Surigao del Sur. Purposive sampling was employed to select respondents who were entrepreneurs or vendors utilizing digital platforms such as Facebook Live Selling, Shopee, and Lazada to market and sell seafood products. The study was situated in Surigao del Sur, a key province in the Caraga Region that aligns with the Caraga Regional Development and Investment Program (CRDIP) and AmBisyon Natin 2040 goals for digital inclusivity. By focusing on this locale, the research aims to generate insights applicable to coastal regions transitioning toward modernized seafood marketing and trade in a resource-constrained environment.

2.3 Research Instruments

The study utilized a structured, role-specific research instrument designed to capture the distinct dimensions of the digital seafood ecosystem. The instrument was divided into three sections: (A) Business Demographics, which gathered data on product types, years in operation, and platform usage; (B) Perception of Digital Marketing Effectiveness, a 45-item scale measuring nine constructs of digital strategy; and (C) Narrative Feedback, consisting of open-ended questions addressing challenges and innovations. All survey items in Section B were rated using a 5-point Likert scale, ranging from *Strongly Disagree* (1) to *Strongly Agree* (5). To ensure content validity, the instrument was reviewed by three experts in marketing and digital commerce, and a pilot test with 15 respondents yielded Cronbach's alpha coefficients above the 0.70 threshold, indicating high internal consistency and reliability.

2.4 Data Gathering Procedure

The data gathering procedure followed a systematic process to ensure ethical compliance and data integrity. Initially, an orientation was conducted for the seafood business owners to explain the purpose of the study and distribute informed consent forms,

emphasizing the voluntary nature of their participation. Following the consent phase, the survey instruments were administered, and the researcher remained available to provide clarifications on technical terms to ensure the accuracy of the responses. Upon completion, the quantitative data were encoded for statistical processing, while the narrative responses from the open-ended sections were transcribed verbatim for qualitative coding. Ethical considerations were strictly maintained throughout the procedure, ensuring that all digital records were anonymized and stored in a secure environment.

2.5 Data Analysis

Data were analyzed using SPSS Statistics for the quantitative phase and reflexive thematic analysis for the qualitative component. Descriptive statistics, specifically the weighted mean and standard deviation, were used to summarize the perceived effectiveness of marketing strategies, interpreted using thresholds (e.g., 3.50–4.49 as "Agree"). Pearson product-moment correlation ($\alpha=0.05$) was employed to examine the relationships between the business profiles and the various marketing constructs. Qualitative data were analyzed following the procedures proposed by Braun and Clarke (2006), where narrative responses were read repeatedly, coded, and refined into overarching themes. This dual-analysis approach allowed for the triangulation of data, ensuring that the "implementation paradoxes" identified in the results were supported by both numerical evidence and the lived experiences of the participants.

3. RESULTS

This section presents the findings of the study organized into four primary areas: the business profile of the seafood entrepreneurs, their perceptions of digital marketing effectiveness, the inferential analysis of the variables, and the qualitative themes derived from their narrative responses. The presentation follows a systematic approach to provide a comprehensive understanding of the digital seafood marketing landscape in Surigao del Sur.

3.1 Business Profile and Digital Platform Usage

The profiling of the participating seafood business owners provides essential context regarding their operational capacity and digital footprint within the region. As shown in Table 1, the product distribution is diverse, with Frozen products (36%) and Value-added meals (32%) comprising the majority of the market offerings. The data further reveals significant industry longevity, as 40% of the respondents have been in operation for more than six years, suggesting a stable business environment currently undergoing digital transition. Regarding platform adoption, Facebook Live Selling (52%) and Shopee (48%) emerged as the most utilized channels, while Social Media Marketing (40%) and Paid Advertisements (40%) serve as the primary strategies for reaching target consumers.

Table 1. Business Profile of Participating Owners

Variable	Frequency	%
<i>Type of Seafood Products</i>		
Dried / Processed (e.g., tuyo, dilis, squid rings)	3	12%
Fresh (e.g., fish, shrimp, crab)	5	20%
Frozen	9	36%
Value-added (e.g., bottled, marinated, pre-packaged meals)	8	32%
<i>Years in Operation</i>		
1–3 years	5	20%

4–6 years	5	20%
Less than 1 year	5	20%
More than 6 years	10	40%
<i>Digital Platforms Used</i>		
Facebook Page	7	28%
Facebook Live Selling	13	52%
Shopee	12	48%
Lazada	6	24%
TikTok Shop	8	32%
Instagram	9	36%
Website with e-commerce	10	40%
<i>Digital Marketing Strategies</i>		
Social Media Marketing	10	40%
Paid Ads (e.g., Facebook/Google)	10	40%
SEO or Website Optimization	7	28%
Live Selling	7	28%
Email Marketing	5	20%
Loyalty or Rewards Programs	7	28%
Mobile App Promotions	7	28%
Influencer Collaborations	5	20%

3.2 Perception of Digital Marketing Effectiveness

The respondents' evaluation of digital marketing strategies across nine constructs was measured to determine the perceived impact on business performance. Table 2 summarizes these perceptions, revealing that business owners generally reported positive attitudes toward digital adoption, with all major categories receiving an overall verbal description of "Agree." The highest perceived effectiveness was recorded in Search Engine Optimization (SEO) Performance (AWM = 3.704, SD = 1.1) and Pay-Per-Click (PPC) Advertising (AWM = 3.656, SD = 0.976), where respondents particularly valued the ability to be discovered by new customers. Conversely, Engagement & Loyalty Programs (AWM = 3.44) and Email Marketing (AWM = 3.456) received the lowest relative weighted means, indicating that these strategies are perceived as moderately effective but perhaps secondary to more direct visibility-driven tools.

Table 2. Business Owners' Perception of Digital Marketing Effectiveness

1. Content Marketing Strategies	Weighted Mean	SD	Verbal Description
a. Content marketing increases customer awareness of my products.	3.56	1.121	Agree
b. Blog posts and infographics are helpful for customers to understand value.	3.56	1.121	Agree
c. Video content makes my seafood products more appealing to buyers.	3.64	0.86	Agree

d. Educational/storytelling content makes customers more likely to buy.	3.84	1.068	Agree
e. Content marketing builds customer trust in my seafood brand.	3.32	0.945	Moderately Agree
Overall Weighted Mean	3.584	1.025	Agree
2. Social Media Marketing (SMM) Impact	Weighted Mean	SD	Verbal Description
a. Social media ads help new customers discover my products.	3.6	1.041	Agree
b. Influencer collaborations make customers more confident in buying.	3.64	1.15	Agree
c. Promoting products on social media builds brand trust.	3.4	1.041	Moderately Agree
d. Regular posting encourages customers to engage with my brand.	3.44	1.193	Moderately Agree
e. SMM effectively improves the likelihood of customer purchases.	3.6	1.041	Agree
Overall Weighted Mean	3.536	1.082	Agree
3. Search Engine Optimization (SEO) Performance	Weighted Mean	SD	Verbal Description
a. Appearing on top of search results helps customers find me easily.	3.6	1.291	Agree
b. Ranking highly on search results improves brand credibility.	3.52	1.159	Agree
c. Customers are more likely to click on my early-ranking links.	4	0.957	Agree
d. SEO-driven results provide customers with relevant product options.	3.6	1.155	Agree
e. Effective SEO increases general interest in my seafood brand.	3.8	0.913	Agree
Overall Weighted Mean	3.704	1.1	Agree
4. Email Marketing Effectiveness	Weighted Mean	SD	Verbal Description
a. Promotional emails about discounts influence customer decisions.	3.84	1.028	Agree
b. Reminder emails help recover customers who viewed products.	3.32	0.9	Moderately Agree
c. My newsletters are informative and persuasive for the audience.	3.12	1.166	Moderately Agree
d. Email updates effectively encourage customers to try new items.	3.52	1.046	Agree
e. Personalized email offers increase the likelihood of purchase.	3.48	1.122	Moderately Agree
Overall Weighted Mean	3.456	1.066	Moderately Agree
5. Pay-Per-Click (PPC) Advertising Results	Weighted Mean	SD	Verbal Description
a. PPC ads help customers notice products they weren't looking for.	3.36	0.86	Moderately Agree
b. Customers pay attention to my ads while browsing online.	3.56	1.044	Agree

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c. Sponsored ads drive significant traffic to my e-commerce pages.	3.84	1.028	Agree
d. Well-targeted ads improve the customer's perception of my brand.	3.76	0.879	Agree
e. PPC advertising influences immediate buying decisions.	3.76	1.052	Agree
Overall Weighted Mean	3.656	0.976	Agree
6. E-commerce Strategy Success (Live Selling/Chatbots)	Weighted Mean	SD	Verbal Description
a. Marketplaces (Shopee/Lazada) are the preferred buying channels.	3.44	1.227	Moderately Agree
b. Chatbots effectively help customers get product information.	3.56	1.121	Agree
c. Live selling sessions are highly effective at building brand trust.	3.88	0.927	Agree
d. Online catalogs are a convenient way for customers to explore.	3.6	1.354	Agree
e. E-commerce platforms make the purchase process more efficient.	3.48	1.005	Moderately Agree
Overall Weighted Mean	3.592	1.129	Agree
7. Mobile Marketing Reach	Weighted Mean	SD	Verbal Description
a. Customers respond positively to my SMS and mobile alerts.	3.52	1.159	Agree
b. App-based discounts effectively drive immediate purchases.	3.84	1.143	Agree
c. Push notifications are effective at reminding customers to return.	3.24	1.052	Moderately Agree
d. Customers appreciate receiving targeted mobile offers.	3.64	0.995	Agree
e. Mobile marketing makes the shopping experience more convenient.	3.16	1.313	Moderately Agree
Overall Weighted Mean	3.48	1.147	Moderately Agree
8. Engagement & Loyalty Program Impact	Weighted Mean	SD	Verbal Description
a. Customer reviews are a key factor in the buying decision.	3.2	0.957	Moderately Agree
b. Loyalty programs effectively increase repeat purchase rates.	3.16	1.313	Moderately Agree
c. Rewarding repeat purchases builds deeper trust with sellers.	3.64	1.186	Agree
d. Referral programs successfully encourage word-of-mouth.	3.6	1.19	Agree
e. Customers enjoy interactive/gamified promotions (points/badges).	3.6	1.155	Agree
Overall Weighted Mean	3.44	1.167	Moderately Agree
9. Perceived Value of Emerging Trends	Weighted Mean	SD	Verbal Description

a. AI-driven personalization increases customer interest in products.	3.44	1.044	Moderately Agree
b. Blockchain verification makes customers feel safer about origin.	3.64	1.075	Agree
c. AR/VR features make the online shopping experience interactive.	3.6	1.118	Agree
d. Innovative tech gives customers confidence in seafood quality.	3.2	0.957	Moderately Agree
e. Customers prefer sellers who use modern digital tools for CX.	3.84	1.068	Agree
Overall Weighted Mean	3.544	1.059	Agree

3.3 Inferential Analysis of Business Profiles and Marketing Effectiveness

To examine the relationships between business characteristics and marketing perceptions, a Pearson product-moment correlation was conducted at a 0.05 level of significance. As presented in Table 3, the Type of Seafood Products did not yield a significant relationship with any of the marketing constructs, as all p-values exceeded the alpha threshold. In contrast, Years in Operation showed a significant positive correlation with SEO Performance ($r = 0.584$, $p = 0.002$) and Content Marketing Strategies ($r = 0.412$, $p = 0.041$), suggesting that more established entrepreneurs place a higher value on long-term digital authority and educational storytelling. Furthermore, the Breadth of Digital Platforms Used was a highly significant predictor of E-commerce Strategy Success ($r = 0.621$, $p = 0.001$), reinforcing the conclusion that diverse platform utilization is a primary driver for perceived transactional efficiency and reach.

Table 3. Inferential Analysis of Business Profile and Marketing Effectiveness

Profile	Perceived Marketing Effectiveness	r-value	P-value	Decision	Interpretation
Type of Seafood Products	Content Marketing Strategies	0.224	0.281	Fail to Reject H^0	Not Significant
	Social Media Marketing (SMM) Impact	0.185	0.376	Fail to Reject H^0	Not Significant
	Search Engine Optimization (SEO) Performance	0.298	0.148	Fail to Reject H^0	Not Significant
	Email Marketing Effectiveness	0.312	0.129	Fail to Reject H^0	Not Significant
	Pay-Per-Click (PPC) Advertising Results	0.245	0.238	Fail to Reject H^0	Not Significant
	E-commerce Strategy Success	0.342	0.094	Fail to Reject H^0	Not Significant
	Mobile Marketing Reach	0.211	0.311	Fail to Reject H^0	Not Significant
	Engagement & Loyalty Program	0.256	0.217	Fail to Reject H^0	Not Significant

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	Impact				
Years in Operation	Perceived Value of Emerging Trends	0.198	0.343	Fail to Reject H ⁰	Not Significant
	Content Marketing Strategies	0.412	0.041	Reject H ⁰	Significant
	Social Media Marketing (SMM)	0.356	0.081	Fail to Reject H ⁰	Not Significant
	Search Engine Optimization (SEO) Performance	0.584	0.002	Reject H ⁰	Highly Significant
	Email Marketing Effectiveness	0.489	0.013	Reject H ⁰	Significant
	Pay-Per-Click (PPC) Advertising Results	0.392	0.053	Fail to Reject H ⁰	Not Significant
	E-commerce Strategy Success	0.288	0.163	Fail to Reject H ⁰	Not Significant
	Mobile Marketing Reach	0.312	0.129	Fail to Reject H ⁰	Not Significant
	Engagement & Loyalty Program Impact	0.405	0.045	Reject H ⁰	Significant
	Perceived Value of Emerging Trends	0.367	0.071	Fail to Reject H ⁰	Not Significant
	Content Marketing Strategies	0.455	0.022	Reject H ⁰	Significant
	Social Media Marketing (SMM)	0.512	0.009	Reject H ⁰	Significant
	Search Engine Optimization (SEO) Performance	0.388	0.055	Fail to Reject H ⁰	Not Significant
	Email Marketing Effectiveness	0.294	0.154	Fail to Reject H ⁰	Not Significant
	Pay-Per-Click (PPC) Advertising Results	0.476	0.016	Reject H ⁰	Significant
Digital Platforms Used	E-commerce Strategy Success	0.621	0.001	Reject H ⁰	Highly Significant
	Mobile Marketing Reach	0.543	0.005	Reject H ⁰	Significant
	Engagement & Loyalty Program Impact	0.312	0.129	Fail to Reject H ⁰	Not Significant
	Perceived Value of Emerging Trends	0.402	0.046	Reject H ⁰	Significant
	Content Marketing Strategies	0.505	0.01	Reject H ⁰	Significant
Digital Marketing Strategies	Social Media Marketing (SMM)	0.658	0	Reject H ⁰	Highly Significant

Impact					
Search Engine Optimization (SEO) Performance	0.421	0.036	Reject H ⁰	Significant	
Email Marketing Effectiveness	0.388	0.055	Fail to Reject H ⁰	Not Significant	
Pay-Per-Click (PPC) Advertising Results	0.521	0.008	Reject H ⁰	Significant	
E-commerce Strategy Success	0.489	0.013	Reject H ⁰	Significant	
Mobile Marketing Reach	0.467	0.019	Reject H ⁰	Significant	
Engagement & Loyalty Program Impact	0.552	0.004	Reject H ⁰	Significant	
Perceived Value of Emerging Trends	0.412	0.041	Reject H ⁰	Significant	

3.4 Qualitative Findings: Challenges and Innovations in Digital Marketing

To complement the quantitative findings, qualitative data were gathered from the narrative responses of the 25 seafood business owners to gain deeper insights into the operational realities of digital commerce. Through reflexive thematic analysis, four interrelated themes emerged that illustrate the challenges, technological adaptations, and professional needs of the local seafood industry. These findings provide a nuanced understanding of how digital tools are perceived not just as marketing instruments, but as essential components of business sustainability and growth.

3.4.1 Theme 1. Infrastructure and Resource Constraints

The majority of the participants (18 out of 25) identified systemic limitations such as poor internet connectivity and limited financial resources as their primary obstacles. Many respondents expressed that these infrastructure gaps hinder their ability to maintain consistent online engagement and compete with larger market players who possess better digital reach. Participant 09 highlighted this struggle, stating:

"My biggest hurdles are our poor internet connectivity and my own limited digital skills." (Participant 09)

Similarly, Participant 04 emphasized the competitive disadvantage caused by financial constraints:

"The competition with giant online sellers is fierce, and our limited budget makes it hard to keep up." (Participant 04)

These responses suggest that while there is a strong willingness to adopt digital tools, the lack of reliable infrastructure and funding remains a significant deterrent to full digital integration in the regional seafood trade.

3.4.2 Theme 2. Technology-Driven Transparency and Traceability

A significant number of participants (14 out of 25) viewed the adoption of advanced technologies like blockchain and QR codes as a revolutionary step for building consumer trust. These tools were seen as vital for ensuring seafood quality and safety, which in turn drives customer confidence in a marketplace where product freshness is the primary concern. Participant 01 shared:

"We decided to implement seafood traceability using QR codes and blockchain technology." (Participant 01)

This sentiment was echoed by Participant 19, who observed a tangible business impact from these innovations:

"We use blockchain for traceability... and it has resulted in a significant increase in our sales." (Participant 19)

The participants viewed these innovations as essential for establishing a credible and transparent brand image, allowing local vendors to modernize their operations and meet international standards for food safety.

3.4.3 Theme 3. Modernizing Engagement through Automation and Live Interaction

Another prominent theme that emerged was the shift toward real-time engagement and the use of automated tools to manage customer interactions (15 out of 25 participants). Business owners recognized that utilizing AI-driven chatbots and live selling sessions allowed them to handle inquiries more efficiently while maintaining a personal connection with buyers. Participant 06 noted:

"We rely heavily on chatbots and automated responses to manage our customer queries." (Participant 06)

For many, these tools represent a necessary evolution from traditional vending to a modernized e-commerce model that prioritizes speed and convenience. Participant 16 added that their primary digital innovation has been *"starting live selling sessions,"* illustrating a proactive approach to adopting interactive marketing trends to capture the attention of digital consumers.

3.4.4 Theme 4. Demand for Professional Strategic Support and Capacity Building

The final theme centered on the participants' recognition of their own skill gaps and the urgent need for expert intervention to ensure long-term success (20 out of 25 participants). Most business owners admitted that while they can navigate basic social media platforms, they lack the specialized knowledge required for high-quality content creation and professional strategic planning. Participant 01 remarked:

"I mostly need professional help with our content creation, like photos and videos." (Participant 01)

This need for professionalization was further echoed by Participant 09, who expressed a desire for high-level guidance:

"I desperately need professional strategy planning with experts to move forward." (Participant 09)

Collectively, these responses underscore that providing access to digital tools is insufficient; sustainable success in the digital seafood industry requires a combination of technological access, continuous professional training, and external strategic support.

4. DISCUSSION

The findings of this study provide empirical evidence regarding the transformative potential of digital marketing within the seafood industry of Surigao del Sur. The significant correlation between platform diversification and marketing success suggests that digital interventions effectively bridge the gap between traditional coastal commerce and modern e-commerce standards.

4.1 Marketing Maturity and the Efficacy of SEO

A critical finding in this study is the high perceived effectiveness of Search Engine Optimization (SEO) among established vendors. The superior rating for early-ranking links ($M = 4.0$) aligns with the Information Search Theory, which posits that digital consumers prioritize ease of access and algorithmic credibility when selecting perishable goods (Morales et al., 2022). This finding is profound: it implies that for seafood entrepreneurs, digital presence is no longer about mere social media visibility but about strategic positioning within the digital marketplace. This mirrors the findings of Sharabati et al., (2024), who argued that "marketing maturity" is achieved when a business transitions from static content to search-driven visibility.

4.2 The "Implementation Paradox": Digital Readiness vs. Infrastructure Gaps

A critical finding in this study is the discrepancy between student Attitude and Actual Use—or in this case, between Entrepreneurial Readiness and Infrastructure Capability. While business owners demonstrated high "Agree" ratings for digital effectiveness, the qualitative findings revealed a significant "implementation gap" caused by poor internet connectivity and limited budgets. Similar "paradoxes" have been documented in other resource-constrained environments in the Philippines, where digital fluency is often overshadowed by systemic technological barriers (Jayalath et al., 2025; Villacorta & Arnado, 2023). This suggests that for seafood vendors in Caraga, the value of digital tools is highly dependent on institutional support rather than individual innovativeness alone.

4.3 Technological Traceability as a Trust Scaffold

The qualitative findings regarding Blockchain and QR code traceability provide a nuanced interpretation of how technology generates social value. In an industry where "hidden" variables like freshness and origin are primary consumer concerns, technology serves as a trust scaffold that validates product quality. This aligns with the "learning-by-doing" principle and recent scholarship suggesting that digital tools must do more than just advertise; they must provide transparency that static marketing cannot replicate (Toala Parraga, 2025; Patel et al., 2023). The integration of these high-tech tools reverberates with the goals of AmBisyon Natin 2040, as local products are effectively "upgraded" to meet global quality standards through digital verification (NEDA, 2024; Eze et al., 2024).

4.4 Modernization through "Live" Behavioral Engagement

The correlational analysis highlights that Digital Platforms Used ($r = 0.621$) is a significant predictor of e-commerce success. This finding is profound: it implies that merely "having" a Facebook page is insufficient; success is driven by behavioral engagement through multi-platform adoption and "Live Selling" (Lady et al., 2023). This aligns with the Media Richness Theory, which argues that real-time, interactive communication is essential for high-uncertainty products like seafood (Ayob, 2021). The shift toward live engagement suggests a "digital wet market" evolution, where the cultural nuances of traditional Philippine trade are successfully preserved within a digital framework.

4.5 Implications for Resource-Constrained Seafood Marketing

The efficacy of digital tools in this study offers a viable solution to the "market gap" in Philippine coastal provinces. As noted in the Introduction, insufficient logistics and distance from urban centers often hinder local seafood trade; however, the findings support the argument that digital tools serve as "low-cost, high-impact" scaffolds (Autio et al., 2022; Sen et al., 2025). The overwhelming demand for professional strategic support (80%) highlights a

critical "skills gap" that requires intervention from academic extension programs. These perceptions suggest that digital technologies should not merely facilitate transactions but also cultivate a more professionalized, resilient entrepreneurship model within the local seafood sector.

5. CONCLUSION

This study successfully evaluated the perceived effectiveness and adoption of digital marketing strategies among seafood business owners in Surigao del Sur, Philippines. The findings confirm that digital marketing significantly enhances transactional efficiency and e-commerce strategy success ($p=.001$), validating these digital tools as essential "scaffolds" for rural coastal commerce in resource-constrained environments. Overall, the results suggest that digital platforms function not only as effective promotional instruments for improving sales but also as meaningful infrastructures that cultivate professional resilience and market competitiveness.

The principal contribution of this research lies in its nuanced application of digital marketing constructs to the local seafood sector, revealing a critical "implementation paradox." While business owners demonstrated high levels of digital readiness and a strong positive attitude toward modern tools, these psychological predispositions do not directly translate into academic or economic gains without stable regional infrastructure. Instead, the study identifies Platform Diversification and Search Engine Optimization (SEO) as the primary drivers of perceived success, suggesting that long-term sustainability is driven by sustained behavioral engagement rather than sporadic social media exposure.

Beyond economic effectiveness, the qualitative findings further revealed that digital marketing generates meaningful social value through technological transparency. Participants recognized blockchain-driven traceability and QR code integration as socially meaningful tools that foster consumer trust, ensure food safety, and promote equitable access to high-value markets. These findings suggest that digital technologies function as instruments for professional responsibility, allowing local vendors to transcend the limitations of the traditional "wet market" model and align their operations with international quality standards.

These findings have significant implications for regional development and the realization of national economic goals under AmBisyon Natin 2040 and the Philippine Development Plan (2023–2028). The study underscores the necessity of instructional and institutional interventions that promote "digital mindset" shifts through professional strategic support and capacity building. By integrating technological innovation with specialized extension programs from academic institutions, policymakers can effectively bridge the "digital divide," fostering an inclusive, sustainable, and globally competitive seafood industry that contributes to the broader socio-economic advancement of the Philippines.

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