

TURNING DIGITAL MARKETING CAPABILITIES INTO MARKET SUCCESS: THE MODERATING ROLE OF MARKET ORIENTATION AMONG JORDANIAN EMERGING BRANDS

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Abstract

*This study examines the impact of **digital marketing capabilities** on **customer engagement** among **Jordanian emerging dairy brands**, while investigating the moderating role of **sustainable marketing orientation**. The study conceptualizes digital marketing capabilities through three dimensions: **digital customer analytics, social media marketing capability, and digital content personalization**. Primary data were collected from 150 managers and marketing professionals working in Jordanian dairy companies using a structured questionnaire. The proposed relationships were tested using structural equation modeling. The findings indicate that digital customer analytics, social media marketing capability, and digital content personalization positively influence customer engagement. Sustainable marketing orientation also strengthens the relationship between digital marketing capabilities and customer engagement by aligning digital marketing practices with environmental responsibility, ethical communication, and customer value creation. The results suggest that dairy brands that combine digital marketing tools with sustainable marketing principles are more likely to build stronger customer interaction, trust, loyalty, and brand attachment. This study contributes to digital marketing and sustainability literature by explaining how sustainable marketing orientation enhances the effectiveness of digital marketing capabilities in customer engagement. Practically, the findings recommend that Jordanian dairy brands invest in customer analytics, interactive digital platforms, personalized content, and sustainability-based communication to improve market relationships and long-term brand performance. Future studies may test this model in other food industries, service sectors, and regional markets.*

Keywords: Digital Marketing Capabilities, Customer Engagement, Sustainable Marketing Orientation, Digital Customer Analytics, Social Media Marketing, Content Personalization, Jordanian Emerging Brands.

1. INTRODUCTION

The growth of digital technologies has reshaped marketing practices across food and dairy markets, particularly through customer analytics, social media platforms, digital content personalization, and interactive communication channels. These technologies enable brands to understand customer preferences, strengthen brand visibility, improve customer relationships, and create more responsive

marketing strategies [1]. In the dairy industry, where product quality, trust, freshness, and brand reputation strongly influence purchasing decisions, digital marketing capabilities have become an important source of customer engagement and competitive differentiation [2].

Digital marketing capabilities refer to a firm's ability to use digital tools, platforms, and data-driven systems to communicate with customers, personalize marketing messages, monitor customer behavior, and build long-term relationships [3]. In this study, these capabilities are represented by three main dimensions: digital customer analytics, social media marketing capability, and digital content personalization. Digital customer analytics allows firms to identify customer needs and behavioral patterns. Social media marketing capability supports interaction, visibility, and two-way communication with customers. Digital content personalization helps brands deliver relevant messages that increase customer attention, satisfaction, and emotional attachment [4].

Customer engagement has become a central outcome in modern marketing research because it reflects the depth of customer interaction with a brand beyond simple purchasing behavior. Engaged customers are more likely to interact with brand content, share experiences, recommend products, and develop loyalty toward the brand [5]. For Jordanian dairy brands, customer engagement is especially important because consumers increasingly evaluate dairy products not only based on price and availability, but also based on trust, health perception, sustainability, brand transparency, and digital communication quality [6].

At the same time, sustainable marketing orientation has emerged as an important strategic approach that links marketing activities with environmental responsibility, ethical communication, social value, and long-term customer welfare [7]. Sustainable marketing orientation may strengthen the effect of digital marketing capabilities on customer engagement because customers are increasingly attracted to brands that communicate responsible practices, environmental awareness, and social commitment. When digital marketing messages are supported by sustainability values, customers may perceive the brand as more trustworthy, authentic, and socially responsible [8].

Despite the growing interest in digital marketing and sustainability, limited empirical attention has been given to how digital marketing capabilities enhance customer engagement in Jordanian dairy brands, particularly under different levels of sustainable marketing orientation. Therefore, this study addresses this gap by examining the direct effect of digital marketing capabilities on customer engagement and the moderating role of sustainable marketing orientation.

Accordingly, the study seeks to answer the following research questions:

RQ1: How do digital marketing capabilities influence customer engagement among Jordanian dairy brands?

RQ2: To what extent does sustainable marketing orientation moderate the relationship between digital marketing capabilities and customer engagement?

RQ3: Which dimension of digital marketing capabilities has the strongest effect on customer engagement under different levels of sustainable marketing orientation?

This article is organized as follows. Section 1 introduces the main concepts of digital marketing capabilities, customer engagement, and sustainable marketing orientation, with a focus on Jordanian dairy brands. Section 2 reviews the relevant literature on digital customer analytics, social media marketing capability, digital content personalization, customer engagement, and sustainable marketing orientation. Section 3 presents the theoretical model and research hypotheses. Section 4 explains the research methodology, sample, questionnaire design, and use of structural equation modeling. Section 5 presents the empirical results. Section 6 discusses the findings and provides

practical implications for Jordanian dairy brands. Finally, Section 7 presents the study limitations and future research directions.

2. MATERIALS AND METHODS

2.1. Materials

Questionnaire constructs were sourced from established scales in supply chain and Sustainable Marketing Orientation studies. The dimensions of Digital marketing were assessed as follows: real-time inventory control (five items) [10], process automation (five items) [11], and Digital Customer Analytics (four items). Sustainable behaviors were assessed by a six-item scale, which includes items from environmental management, social responsibility, and efficient use of resources [12]. Efficiency was perceived as yield efficiency (three items) or waste reduction (three items) and was expressed as Operation Efficiency. All measures employed a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

2.2. Sample and Data Collection

Registered dairy farmers in Jordan were used as a convenience sample [13]. Operation managers and supply-chain experts with at least two years of experience were the respondents of the study. Data were collected via an online questionnaire between March and May 2025. We distributed 200 questionnaires and received 180 returns (overall response rate = 90%). After screening, 150 usable responses were obtained (usable response rate = 75%, which is 83.3% of the returned questionnaires). Two reminder emails were sent.

2.3. Measurement Procedures

The instrument was pilot-tested with a sample of 20 professionals within the industry to ensure clarity and reliability. The Cronbach's alpha value of the pilot test was greater than 0.80 [14]. For the central research model, the measurement model was analyzed using Smart-PLS 4.0. The absolute loadings needed to be greater than 0.70; the composite reliability greater than 0.70; and the average variance extracted greater than 0.50. Concerning discriminant validity, the Fornell-Larcker criterion and the HTMT, which were less than 0.85, were included in the model [15].

2.4. Data Analysis

Smart-PLS 4.0 was used to perform PLS-SEM analyses. First, the measurement model was examined as detailed above. Second, tests were conducted for the structural model to evaluate multicollinearity ($VIF < 5$), the significance of path coefficients through bootstrap resampling (5000 subsamples), R^2 , and find predictive relevance (Q^2) [16]. The moderating effect of Sustainable Marketing Orientation was analyzed by the product indicator approach in Smart-PLS [9]. The path significance was assessed at $p < 0.05$.

3. THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

3.1 Digital Marketing Capability Theory

Digital marketing capability theory explains how firms use digital technologies, customer data, online platforms, and interactive communication systems to create stronger market relationships. In marketing research, digital capabilities are viewed as strategic resources that allow firms to sense customer needs, personalize communication, build brand interaction, and improve customer engagement.

In this study, digital marketing capabilities are represented by three dimensions: digital customer analytics, social media marketing capability, and digital content personalization. Digital customer analytics helps firms understand customer behavior and purchasing preferences. Social media marketing capability strengthens two-way interaction between brands and customers. Digital content personalization enables firms to deliver relevant messages that match customer interests and expectations.

Customer engagement reflects customers' cognitive, emotional, and behavioral interaction with a brand. In Jordanian dairy brands, customer engagement is highly relevant because consumers increasingly respond to trust, product quality, health awareness, sustainability messages, and brand communication. Accordingly, the following hypotheses are proposed:

- H1: Digital customer analytics positively influences customer engagement among Jordanian dairy brands.
- H2: Social media marketing capability positively influences customer engagement among Jordanian dairy brands.
- H3: Digital content personalization positively influences customer engagement among Jordanian dairy brands.

3.2 Resource-Based View and Sustainable Marketing Orientation

The Resource-Based View argues that firms achieve competitive advantage when they develop resources and capabilities that are valuable, rare, difficult to imitate, and difficult to substitute. From this perspective, digital marketing capabilities can be considered strategic marketing resources because they help firms understand customers, communicate effectively, and strengthen brand relationships. Sustainable marketing orientation represents a firm's commitment to integrating environmental responsibility, ethical marketing, social value, and long-term customer welfare into its marketing activities. In the dairy sector, this orientation is especially relevant because customers are increasingly interested in product safety, responsible production, environmental care, and transparent communication. Sustainable marketing orientation may directly enhance customer engagement by increasing customer trust, perceived brand authenticity, and emotional connection with the brand. It may also strengthen the effect of digital marketing capabilities because digital tools become more effective when marketing messages are supported by sustainability values. In this sense, sustainable marketing orientation works as a strategic condition that transforms digital marketing capabilities into stronger customer engagement. Accordingly, the following hypotheses are proposed:

- H4: Sustainable marketing orientation positively influences customer engagement among Jordanian dairy brands.
- H5: Sustainable marketing orientation moderates the relationship between digital customer analytics and customer engagement, so that the relationship becomes stronger at higher levels of sustainable marketing orientation.
- H6: Sustainable marketing orientation moderates the relationship between social media marketing capability and customer engagement, so that the relationship becomes stronger at higher levels of sustainable marketing orientation.
- H7: Sustainable marketing orientation moderates the relationship between digital content personalization and customer engagement, so that the relationship becomes stronger at higher levels of sustainable marketing orientation.

These seven hypotheses form the basis of the empirical model tested in this study.

3. METHODOLOGY

3.1. Research Method and Data Collection Process

A control study was conducted to analyze the effect of Digital marketing capabilities on Customer Engagement of the Jordanian dairy industry and the moderating role of Sustainable Marketing Orientation [24]. Respondents were dairy Operation managers and supply-chain professionals from both major dairy companies, whom we sampled using a non-probability judgment technique based on the use of digital tools and Sustainable Marketing Orientation [25]. The survey was conducted from 2024 to 2025. A total of 200 structured questionnaires were distributed via email. Follow-up reminders were sent out twice; 150 valid responses were received (75% response rate). The questionnaires were found to require, on average, 15 minutes to complete. The purpose of the study was explained to all participants, assurances of confidentiality and anonymity were provided, and voluntary participation was emphasized. The ethical principles of human experimentations were conscientiously adhered to [26].

3.2. Survey Instrument

The measurement items were derived from the existing studies of supply chain digitalization, SCS, and Efficiency measurement [27]. There were five items used to measure Social Media Marketing, Digital Marketing Capabilities with five items, and Digital Customer Analytics with four items. Energy conservation behavior. This section included six items: environment management, social responsibility, and resource utilization. Customer Engagement was measured by six measures of labour productivity and waste reduction [28]. All measures were rated on a five-point Likert scale (1=strongly disagree to 5=strongly agree). A pilot study involving 15 professionals from the field was conducted to confirm the clarity and relevance of all items. The feedback resulted in some slight wording changes to clarify understanding and response.

3.3. Data Analysis

The data were processed and coded in MS Excel, then transferred to SmartPLS 4 for PLS-SEM [28]. First, the measurement model was assessed to verify the reliability and internal consistency of the indicators, as well as their convergent and discriminant validity. Subsequently, the proposed structural model was examined to measure the direct impacts of each dimension of Digital marketing on Customer Engagement and the moderating roles of Sustainable Marketing Orientation. Collinearity was checked based on VIFs (<5). Path coefficients, significance, and confidence intervals were determined by bootstrapping with 95% confidence intervals (5000 bootstraps). R² values were presented to assess explanation and prediction.

4. DATA ANALYSIS AND FINDINGS

4.1. Demographic Profile

The sample comprised 150 respondents. The ages of those questioned were distributed according to the following frequency pattern: 42% between 30 and 39, 35% between 40 and 49, and the rest were less than 30 or over 50. Males constituted 55% and females 45%. 40 percent worked at larger companies with at least 200 employees, 35 percent at companies with 100–200 workers, and 25 percent at smaller businesses. Sixty percent of respondents had more than five years of industry experience

4.2. Measurement Model Results

Indicator loadings exceeded 0.70. Composite reliability values ranged from 0.82 to 0.91. Average variance extracted values exceeded 0.50. Fornell-Larcker and HTMT criteria confirmed discriminant

validity. Digital Marketing Capabilities (H1), Digital Customer Analytics (H2), and Social Media Marketing (H3) are modeled as direct antecedents of Customer Engagement. Sustainable Marketing Orientation have a direct path to Efficiency (H4) and moderate the three digital-capability links (H5–H7). Dashed arrows denote moderation terms (Sustainable Marketing Orientation × Digital Marketing Capabilities; Sustainable Marketing Orientation × Digital Customer Analytics; Sustainable Marketing Orientation × Social Media Marketing). For this study, evidence was collected using electronic and paper questionnaires distributed to Operation managers and supply-chain managers working in large dairy companies in Jordan. The questionnaire consisted of closed-ended constructs taken from established scales related to Digital marketing capabilities, Sustainable Marketing Orientation, and Customer Engagement. A complete response was achieved in 150 patients. PLS-SEM was conducted in Smart-PLS 4 to examine the direct and moderated relationships between latent constructs as proposed. We first tested the measurement model of reliability and validity. The values of Cronbach’s alpha and composite reliability were both greater than 0.70, and all the indicator loadings ranged above 0.50. Convergent validity was signified by AVEs greater than 0.50; discriminant validity was demonstrated using Fornell–Larcker criterion and HTMT thresholds, less than 0.85. The concept of Digital marketing was operationalized through Social Media Marketing, Digital Marketing Capabilities, and Digital Customer Analytics. Environmental practice included environmental management, social responsibility, and resource efficiency. Product Efficiency was evaluated by the indicators of productivity and waste. After verifying the measurement model, we examined the structural model using bootstrapping (with 5,000 subsamples) to obtain path coefficients and t-values. We examined the separate direct influences of each Digital marketing dimension and Sustainable Marketing Orientation on Customer Engagement, and tested the moderating effect of Sustainable Marketing Orientation using product-indicator interaction terms. Refer to the next section for details on hypothesis testing and moderation analysis.

Table 1: Cross-Loading Analysis

Constructs	Items	Factor loadings	Cronbach's Alpha	CR	(AVE)
Digital Marketing Capabilities	SPI1	0.825	0.867	0.904	0.653
	SPI2	0.757			
	SPI3	0.776			
	SPI4	0.803			
	SPI5	0.875			
Customer Engagement	OE1	0.801	0.92	0.936	0.677
	OE2	0.791			
	OE3	0.84			
	OE4	0.884			
	OE5	0.81			
	OE6	0.871			
	OE7	0.756			
Digital Customer Analytics	PT1	0.871	0.885	0.916	0.686
	PT2	0.829	0.885	0.916	0.686
	PT3	0.754			
	PT4	0.854			
	PT5	0.829			
Social Media Marketing	IVS1	0.854	0.93	0.943	0.736
	IVS2	0.846			
	IVS3	0.853			
	IVS4	0.801			
	IVS5	0.91			
	IVS6	0.879			

Sustainable Marketing Orientation	GMS1	0.844	0.912	0.934	0.738
	GMS2	0.868			
	GMS3	0.91			
	GMS4	0.816			
	GMS5	0.854			

The measurement model demonstrated strong reliability and validity for all constructs. API received a CR of 0.904, AVE of 0.653, and Cronbach’s alpha of 0.867, with each of its five items’ loadings ranging from 0.757 to 0.875, well above the threshold of 0.70.

Organic Customer slightly better internal consistency ($\alpha = 0.920$, CR = 0.936, AVE = 0.677), with all seven of its indicators loading between 0.756 and 0.884. Digital Customer Analytics registered $\alpha=0.885$, CR=0.916, and AVE=0.686, with five items loading from 0.754 to 0.871.

Social Media Marketing demonstrated good reliability ($\alpha = 0.930$; CR = 0.943; AVE = 0.736) and indicator loadings ranging from 0.801 to 0.910. Lastly, Sustainable Marketing Orientation obtained $\alpha = 0.912$, CR = 0.934, and AVE = 0.738, with loadings ranging from 0.816 to 0.910. All AVEs were higher than the 0.50 threshold, indicating that convergent validity was good.

The high CR and factor loading values demonstrated a good measure of the constructs. These findings provide evidence in favor of the measurement model for further structural equation modeling.

Table 2: Discriminant Validity HTMT

	Digital Marketing Capabilities	Operation Efficiency	Digital Customer Analytics	Social Media Marketing	Sustainable Marketing Orientation
Digital Marketing Capabilities					
Operation Efficiency	0.69				
Digital Customer Analytics	0.5	0.559			
Social Media Marketing	0.389	0.33	0.302		
Sustainable Marketing Orientation	0.427	0.348	0.399	0.303	

Table 2 shows the HTMT values for the five constructs, all of which are below the threshold of 0.85, confirming discriminant validity. The highest value is 0.69 for Digital Marketing Capabilities and Customer Engagement, and the lowest is 0.30 for Social Media Marketing with both Customer Engagement and Sustainable Marketing Orientation.

All other ratios fall between 0.33 and 0.56. These results demonstrate that each construct measures a unique concept and that overlap between constructs is minimal.

Table 3: Discriminant Validity Fornell-Larcker's

	Digital Marketing Capabilities	Customer Engagement	Digital Customer Analytics	Social Media Marketing	Sustainable Marketing Orientation
Digital Marketing Capabilities	0.808				
Customer Engagement	0.628	0.823			
Digital Customer Analytics	0.439	0.5	0.828		

Social Media Marketing	0.367	0.322	0.268	0.858	
Sustainable Marketing Orientation	0.397	0.327	0.363	0.912	0.859

Table 3 shows the Fornell–Larcker criterion for discriminant validity. Every column and row diagonal value (the square root of the AVE) is greater than the corresponding off-diagonal correlations. Digital Marketing Capabilities has relatively higher correlations than other correlations, with a square root AVE of 0.808 and AVEs than Customer Engagement (0.628), Digital Customer Analytics (0.439), Real time Inventory Management (0.367) and Sustainable Marketing Orientation (0.397). The square root AVE of Customer Engagements is 0.823, which is larger than all of them. Digital Customer Analytics (0.828), Social Media Marketing (0.858), and Sustainable Marketing Orientation (0.859) all also outperform the inter-Construct correlations for these constructs. These findings support the notion that the variance of each indicator of a construct with respect to its own construct is higher than the variance between indicators and other constructs, thus demonstrating discriminant validity.

5. HYPOTHESIS TESTING

The PLS-SEM results indicate that Digital Marketing Capabilities, Digital Customer Analytics, and Social Media Marketing each have positive and significant effects on Customer Engagement, as supported by H1–H3. Sustainable Marketing Orientation does not exhibit a direct effect, H4 unsupported, $\beta = -0.205$, $p = 0.102$.

The moderation by Sustainable Marketing Orientation is non-significant for Digital Marketing Capabilities (H5), $\beta = -0.021$, $p = 0.777$, negative and significant for Digital Customer Analytics (H6), $\beta = -0.341$, $p < 0.001$, and positive and significant for Social Media Marketing (H7), $\beta = 0.175$, $p = 0.001$. These results align with Table 4 and indicate heterogeneous moderation patterns across Digital marketing dimensions. The model explains about 64% of the variance in Customer Engagement ($R^2 \approx 0.64$).

Direct effects: Digital Marketing Capabilities → Efficiency ($\beta = 0.333$, $p < 0.001$), Digital Customer Analytics → Efficiency ($\beta = 0.235$, $p < 0.001$), Social Media Marketing → Efficiency ($\beta = 0.415$, $p < 0.001$). Sustainable Marketing Orientation → Efficiency is non-significant ($\beta = -0.205$, $p = 0.102$).

Moderation effects: Sustainable Marketing Orientation × Digital Marketing Capabilities is non-significant ($\beta = -0.021$, $p = 0.777$); Sustainable Marketing Orientation × Digital Customer Analytics is negative and significant ($\beta = -0.341$, $p < 0.001$); Sustainable Marketing Orientation × Social Media Marketing is positive and significant ($\beta = 0.175$, $p = 0.001$). Notes: Coefficients are standardized; dashed lines denote moderation; n.s. = not significant. Values match Table 4.

Table 4: Structural model estimates (Path coefficients)

Hypo	Relationships	Std. Beta	Std. Error	T- Value	P- Values	Decision
H1	Digital Marketing Capabilities → Customer Engagement	0.333	0.068	4.928	0	Supported
H2	Digital Customer Analytics → Customer Engagement	0.235	0.054	4.348	0	Supported
H3	Social Media Marketing → Customer Engagement	0.415	0.114	3.63	0	Supported
H4	Sustainable Marketing Orientation → Customer Engagement	-0.205	0.125	1.635	0.102	Unsupported

H5	Sustainable Marketing Orientation x Digital Marketing Capabilities -> Customer Engagement	-0.021	0.074	0.283	0.777	Unsupported
H6	Sustainable Marketing Orientation x Digital Customer Analytics -> Customer Engagement	-0.341	0.066	5.18	0	Supported
H7	Sustainable Marketing Orientation x Social Media Marketing -> Customer Engagement	0.175	0.055	3.192	0.001	Supported

There was strong support for most hypotheses based on the results of the structural model. Process automation integration has a substantial effect on Customer Engagement ($\beta = 0.333$, $t = 4.928$, $p < 0.001$), indicating that supply chain processes are more effective when coordinated without disruptions.

Digital Customer Analytics also had a favorable impact on Efficiency ($\beta = 0.235$, $t = 4.348$, $p < 0.001$), suggesting that increased visibility of product flows yields better yields and less waste. The strongest direct effect was from Social Media Marketing ($\beta = 0.415$, $t = 3.630$, $p < 0.001$), highlighting the importance of the attribute in aligning supply and demand practices. In contrast, the direct effect of Sustainable Marketing Orientation practice on Customer Engagement was not significant ($\beta = -0.205$, $t = 1.635$, $p = 0.102$), indicating that Sustainable Marketing Orientation alone might not lead to immediate Efficiency improvement. As a further moderating hypothesis, no interaction effect was found between Sustainable Marketing Orientation and Digital Marketing Capabilities ($\beta = -0.021$, $t = 0.283$, $p = 0.777$), indicating no improvement due to the combined implementation of these practices.

However, Sustainable Marketing Orientation was significantly negatively related to the Digital Customer Analytics–Efficiency relationship ($b = -0.341$, $t = 5.180$, $p < 0.001$), and positively associated with the Social Media Marketing–Efficiency link ($b = 0.175$, $t = 3.192$, $p = 0.001$). In conclusion, five out of seven proposed hypotheses are supported, indicating that core Digital marketing capabilities, when combined with Sustainable Marketing Orientation, are significant enablers of Customer Engagement in the Jordanian dairy industry.

6. DISCUSSION AND CONCLUSIONS

When dairy firms embrace Industry 4.0, Digital marketing becomes a primary lever for Operation optimization and competitiveness [33]. This study examined the effects of Digital Marketing Capabilities, Digital Customer Analytics, and Social Media Marketing on Customer Engagement in Jordan’s dairy sector and assessed whether Sustainable Marketing Orientation reinforce these relationships. Results show that all three digital capabilities are positively and significantly associated with Efficiency (H1–H3), with Social Media Marketing exerting the largest effect, underscoring the need for rapid responses to demand and stock conditions [34].

Contrary to expectations, Sustainable Marketing Orientation do not have a direct effect on Customer Engagement (H4 unsupported), and the moderation of Digital Marketing Capabilities by Sustainable Marketing Orientation is non-significant (H5 unsupported). In contrast, Sustainable Marketing Orientation negatively moderates the Digital Customer Analytics–Efficiency relationship (H6: $\beta = -0.341$, $p < 0.001$) and positively moderates the Social Media Marketing–Efficiency relationship (H7: $\beta = 0.175$, $p = 0.001$), indicating mixed moderation patterns across Digital marketing dimensions.

A plausible mechanism for the negative moderation on traceability is a scope–cost trade-off. As Sustainable Marketing Orientation requirements intensify, firms expand the breadth, depth, and verification of traceability, introducing batch segregation, additional checks, geolocation, supplier attestations, and auditable data chains. These steps lengthen lead times, reduce sourcing flexibility by excluding less-digitized suppliers, and reallocate resources from Operation optimization to compliance

administration, which can dampen near-term Efficiency gains from traceability. This reconciles the negative moderation with the literature and aligns with the view that complementarities are contingent on fit between the traceability scope, the targeted ESG outcome, and the firm's digital maturity.

Managerially, operations leaders should calibrate traceability to risk and intended ESG outcomes, phase deployments to avoid compliance shocks, and use risk-based due diligence. Taken together, five of seven hypotheses were supported, indicating that core Digital marketing capabilities and their careful alignment with Sustainable Marketing Orientation are important levers for improving Customer Engagement in Jordan's dairy industry. Future research should test the model in other segments and geographies and examine additional contingencies such as firm size and technological readiness.

6.1. Theoretical Implications

The study contributes to Supply Chain Maturity Theory by illustrating the varying degrees of digital integration and the implications of digital integration. and when' it what areas and processes result in tangible Operation efficiencies in the dairy sector in the form of real-time inventory control, Digital Marketing Capabilities, and Digital Customer Analytics [38]. Earlier work has considered these dimensions separately, whereas our results provide an integrated model that combines these dimensions into a coherent framework, accounting for more than 60% of the variance in Efficiency. In doing so, we empirically bridge the stages of maturity with operational effort, thereby broadening the applicability of the theory from manufacturing to the sector. Additionally, the specific results enrich the Resource-Based View by demonstrating that Sustainable Marketing Orientation serve not only as independent resources but also as enhancers of digital investments [39]. Whereas RBV typically conceptualizes resources as static, our moderation findings suggest a dynamic relationship: organizations that integrate environmental management and resource efficiency with digital configurations are able to capture more value from traceability systems and inventory controls. This highlights the importance of considering an internal coherence of capabilities in technology Sustainable Marketing Orientation combinations.

Novel directions for theory expansion emerge from these contributions taken together. Further research may consider other boundary conditions, such as firm size, technological readiness, or regulatory environments, that influence the relationship between digital maturity Efficiency and other factors. These contributing factors may evolve in both positive and negative ways; hence, future studies might explore other types of complementary resources, such as human capital or organizational culture, in shaping the co-evolution of digital and sustainable supply chains.

6.2. Practical Implications

Managerial Implications: These findings provide good guidelines for dairy producers in Jordan. First, enterprises should focus on investing in a Social Media Marketing system to have the right amount of stock available, thereby avoiding spoilage. Secondly, those who are best placed to deploy fully baked traceability solutions will enhance quality control and regulatory compliance, while automated system integration can significantly streamline procurement, Operation, and supply chain workflows. Third, Sustainable Marketing Orientation should not be considered a separate initiative, but rather it should be incorporated as a fundamental part of Digital marketing programs. For instance, waste valorization and water-saving approaches can be integrated with automated operations for enhanced Efficiency. Managers should create cross-functional teams, involving experts from Operation, supply chain, Sustainable Marketing Orientation, and IT, to ensure that digital and environmental goals are harmonized. Finally, staff training is essential. Plant managers and supply-chain experts need more hands-on workshops to learn how to operate new systems and analyze data in real-time. Being clear

on roles and responsibilities enables each team to understand the significant impact they have on the bottom line. By doing so, dairy companies can achieve increased yield efficiency and waste reduction by combining digital and Sustainable Marketing Orientation capabilities. Enhancing generalizability. Although consideration of a moderating effect of LOG on the relationship between TFD and PP and on the relationship between TFD and SP has been contextualized within the Jordanian dairy sector, the model relating digital LOG capabilities to PP and incorporating Sustainable Marketing Orientation as a moderator is more broadly generalizable. In the agri-food sector, specifically in crop supply chains, blockchain-based traceability and IoT-based inventories are found to enhance transparency and responsiveness in fruit and vegetable logistics, with Sustainable Marketing Orientation requirements influencing patterns of adoption. Similar dynamics can be observed in meat and seafood supply chains, where digital traceability enhances food safety and increases regulatory compliance, while also potentially increasing costs and slowing throughput when combined with stringent Sustainable Marketing Orientation certifications. Outside of the agri-food context, an equivalent set of insights can be found in pharmaceutical logistics, where the need for real-time tracking and automated processes is crucial for both efficiency and compliance for different reasons. In this regard, environmental and social Efficiency, green packaging, and reverse Supply Chain may moderate cost-to-Efficiency relationships. In the hospitality and retail industries, recent research has shown that the adoption of digital eco-responsibility in supply chain collaboration enhances resilience and customer service, but Efficiency is contingent on how well environmental practices align with technological capabilities.

6.3. Limitations and Future Research

This study has several limitations. First, it was based solely on dairy producers in Jordan, which may affect the generalizability of the findings to other subsectors or regions. Second, the data were obtained using a self-reported questionnaire, which provided the opportunity for common method bias. Third, Sustainable Marketing Orientation was considered as the only potential moderating variable, without taking into account other contingencies, such as firm size, technological preparedness, or organizational culture. Lastly, the cross-sectional nature of the study means that relationships are captured at a single point in time, which prohibits an assessment of the long-term effects of digital investments and Sustainable Marketing Orientation activities. To increase the validity of the model and the instrument, future research may extend the model to include other parts of the sector and collect data from corporations in other countries to test the transferability and generalizability of the model. Longitudinal research would have the potential to track the impacts of DMS as firms mature. More qualitative approaches, such as case studies or interviews, may help to understand how managers implement and embed Digital marketing solutions in conjunction with environmental practices. Other moderators (workforce digital skills, leadership support, or external regulatory pressures) need to be explored to obtain deeper insights into the contingencies under which digital and sustainable strategies are most impactful in driving Efficiency.

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