CUSTOMER - CENTRIC APPROACH IN DIGITAL TRANSFORMATION AND DATA - DRIVEN MARKETING AMONG CONSUMER ELECTRONICS ENTERPRISES IN HA NOI CITY

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Summary

Digital transformation has become a crucial determinant of core competitiveness, with customer experience regarded as its central focus. In Viet Nam, despite strong government initiatives and rapid digital economic growth, small and medium-sized enterprises (SMEs), particularly in the consumer electronics sector, continue to face challenges due to fragmented data systems, limited resources, and insufficient integration of customer data as a foundation for adaptive marketing decisions. This study examines the evolving role of customers in the digital transformation of SMEs in Ha Noi City, analyzing how customer orientation drives digital maturity, enhances customer experience, and improves business performance. Based on the study results, the study proposes a customer data-driven marketing framework tailored for Ha Noi's consumer electronics SMEs, focusing on unified customer data platforms, predictive analytics, and omnichannel personalization. Policy recommendations include establishing a Ha Noi Consumer Electronics Data Hub, implementing capacity-building programs for digital marketing analytics, and providing fiscal incentives for investments in CRM systems and data infrastructure.

INTRODUCTION

Digital transformation (DX) has shifted from an emerging trend to an essential driver of global competitiveness. Gartner (2024) reports that more than 94% of organizations worldwide have adopted some form of DX, while 68% of business leaders identify customer experience (CX) enhancement as their top strategic priority. In Southeast Asia, Viet Nam is among the fastest-growing digital economies, with its digital GDP projected to reach 30% by 2030 (World Bank, 2024). Despite this momentum, small and medium-sized enterprises (SMEs) remain the slowest to digitalize due to constraints in capital, human resources, and fragmented customer management systems.

Viet Nam's National Digital Transformation Program to 2025, with a vision to 2030, positions SMEs at the center of the digital economy. As of 2025, SMEs contribute 41% of national GDP, employ more than 9 million workers, and account for nearly 60% of private-sector employment (VCCI, 2025). However, only 48% have implemented any structured form of digitalization (MIC, 2024), highlighting a substantial readiness gap despite supportive policies and infrastructure.

The COVID-19 pandemic accelerated digital adoption but primarily as a survival response rather than a strategic shift. Meanwhile, consumer behavior changed rapidly. Viet Nam's e-commerce revenue reached USD 21.5 billion in 2024, with 72% of consumers preferring digital-first shopping experiences (Statista, 2024). These shifts create dual pressures for SMEs: to deploy technology effectively and to build trust-based, personalized CXs. Without a customer-centric approach, DX risks becoming a superficial "digital shell."

This paper examines the evolving role of customers in SMEs' DX-focusing on consumer electronics enterprises in Ha Noi-and analyzes challenges related to customer data integration, digital tools, and human factors. It proposes sustainable, customer-centered DX strategies tailored to the Vietnamese SME context.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Digital Transformation

Digital Transformation (DX) involves integrating digital technologies across an enterprise to fundamentally reshape operations, value creation, and organizational structure (Rogers, 2022). Unlike simple digitization, DX requires redesigning business models to enhance efficiency, agility, and customer value. McKinsey &

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Company (2024) highlight three strategic pillars of DX: CX, data-driven decision-making, and organizational agility, which enable firms to respond effectively to market volatility and shifting customer expectations.

For SMEs, Evidence from VCCI (2025) shows that while 56% of Vietnamese SMEs use DX mainly to improve communication and marketing, fewer than 20% pursue data-driven restructuring, revealing a significant gap between digital adoption and digital maturity. Accenture (2024) suggests that the structure of DX can be analyzed across 4 interdependent layers: (i). Technological Infrastructure: Involving the adoption of foundational technologies such as Cloud Computing, Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), and AI-based data analytics; (ii). Organizational change: Reflected in leadership commitment, digital culture adaptation, and enhancement of employees' digital capabilities to foster innovation and agility; (iii). Process optimization: Simplifying and automating workflows to increase efficiency and reduce transaction costs; (iv). Customer interaction: Designing customer-oriented systems to enhance experience, trust, and value co-creation.

Data - Driven Marketing

Data-Driven Marketing (DDM) is an approach that leverages data from multiple sources-such as CRM systems, social media analytics, website traffic, and sales records-to analyze, predict, and optimize marketing decisions.

The adoption of DDM is underpinned by several theoretical frameworks:

Resource-Based View (RBV) (Barney, 1991): positions data as a strategic asset capable of generating sustainable competitive advantage when properly managed.

Technology Acceptance Model (TAM) (Davis, 1989): highlights perceived usefulness and ease of use as determinants of managerial acceptance of data systems.

Technology–Organization–Environment (TOE) Framework (Tornatzky & Fleischer, 1990): explains how technological readiness, organizational conditions, and external pressures shape SMEs' adoption of DDM practices.

Collectively, these perspectives show that successful DDM implementation relies not only on technology but also on leadership commitment, strategic orientation, and a data-driven organizational culture.

Customer - Centric Approach

The Customer - Centric Approach (CCA) is a strategic philosophy that orients all business activities - from product and service design to post-purchase care - around creating maximum value and delivering the best possible experience for customers (Shah et al., 2006). In the digital era, Kotler and Keller (2023), a customer - centric enterprise must deeply understand the customer journey, measure Customer Lifetime Value (CLV), and build sustainable relationships through consistent, long - term engagement across multiple channels (omnichannel).

Core Principles of Customer - Centric Marketing

There are 4 core Principles of customer - centric marketing as below:

- *Deep understanding of needs and Behaviors:* leverage data to uncover hidden needs, consumption patterns, and emotional drivers across customer segments.

- *Personalization:* Customize content, products, and services to match each individual's unique preferences and behaviors.

- *Maximization of customer lifetime value (CLV):* Focus on retaining and expanding relationships with existing customers rather than merely acquiring new ones.

- *Integration of technology and emotion:* Utilize digital technologies to create a more humanized CX that blends emotional connection with technological convenience.

The relationship between DDM and CCA

While DDM represents the toolset, the CCA serves as the guiding philosophy.

- CCA defines the purpose-aiming for customer value and satisfaction.

- DDM provides the means-data, technology, and analytics to achieve that goal.

When these 2 elements are integrated, firms can achieve: A seamless and consistent CX across platforms and touchpoints; Trust-based relationships supported by data transparency and factual evidence; A higher level of digital maturity, through full integration of customer data across marketing, sales, and after-sales systems.

For Vietnamese SMEs, especially in the consumer electronics sector, investing in customer-centric DX enables the development of a comprehensive customer data and relationship management system (e.g., CRM, CDP).

Enhancing data analytics capability is therefore not merely a technical improvement but a strategic marketing imperative-one that transforms data into actionable insights to strengthen customer relationships and long-term business performance.

THEORETICAL MODELS OF CUSTOMER-CENTRIC DIGITAL TRANSFORMATION

Research design

Building upon extant theories of DX and customer orientation, this study develops a structural model grounded in the customer-centric paradigm. The research investigates how 4 core constructs: Customer Orientation (CO), Digital Maturity (DM), CX, and Business Performance (BP).

Interact within the digital ecosystems of SMEs in Ha Noi's consumer electronics retail sector.

The theoretical foundation integrates principles from the TOE and RBV, positing that firms with strong customer orientation are more likely to achieve higher levels of digital maturity, thereby enhancing CX and business outcomes.

To empirically examine these relationships, the study employs Partial Least Squares Structural Equation Modeling (PLS-SEM), a robust multivariate technique suitable for predictive and exploratory research involving complex models and small-to-medium sample sizes (Hair et al., 2022).

Research model

Proposed causal linkages (Figure 1):

- Customer Orientation (CO) is hypothesized to foster greater Digital Maturity (DM).

- Digital Maturity (DM), in turn, enhances CX through better personalization, responsiveness, and service quality.

- Customer Experience (CX) acts as a mediating factor influencing Business Performance (BP), reflecting both customer satisfaction and loyalty outcomes.

Research hypotheses

Based on the above theoretical reasoning, the following hypotheses are formulated:

H1: CO positively influences DM.

H2: CO directly and positively affects CX.

H3: DM positively influences CX.

H4: CX positively affects BP.

H5: DM indirectly influences BP through CX.

Sampling and data collection

Study context: The empirical research focuses on Ha Noi City, the largest consumer electronics retail hub in Northern Viet Nam, which hosts over 1,200 stores, approximately 85% of which are SMEs (VCCI, 2025) during the period from March 2025 to August 2025.

Sampling method: A purposive non-probability sampling approach was adopted to capture firms most representative of the SME landscape. The sample encompasses enterprises located in Ha Noi - areas characterized by dense retail activity and rapid digital adoption.

Sample size and respondents: A total of 200 small and medium-sized consumer electronics enterprises participated in the study. Respondents primarily comprised middle managers and store owners (e.g., general directors, sales managers, marketing executives, and customer service heads) who possess strategic and operational insights into the firms' DX initiatives.

Measurement instrument: Data were collected using a structured questionnaire employing a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Measurement items were adapted from validated scales in prior research on customer orientation, digital maturity, and CX (Verhoef et al., 2021).

Data analysis: Collected data were processed and analyzed using SmartPLS 4.0, following a two-stage analytical procedure: (1) assessment of measurement reliability and validity (Cronbach's alpha, Composite reliability, Average Variance Extracted (AVE); and (2) evaluation of structural model relationships through bootstrapping (5,000 resamples) to test the significance of hypothesized paths.

This methodological approach ensures both construct

FIGURE 1: RESEARCH MODEL
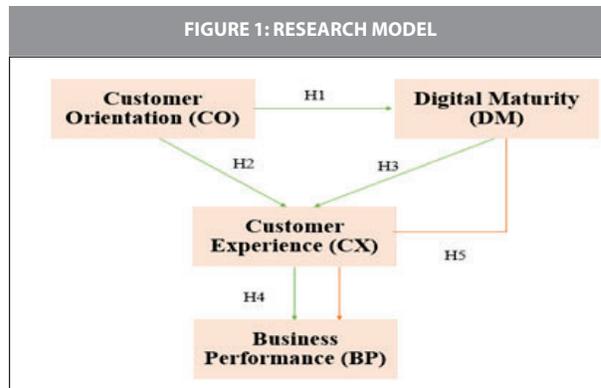
Source: Proposed by the author

validity and predictive accuracy, providing empirical evidence for how customer orientation and digital maturity jointly contribute to superior CXs and business outcomes in the context of Viet Nam's digital economy.

RESULTS AND DISCUSSION

Results

Reliability and Validity of constructs

Table 1 presents the reliability and validity indices of the 4 latent constructs.

All Cronbach's Alpha (α) values exceeded 0.70 and all AVE values exceeded 0.50, indicating strong internal consistency and convergent validity (Hair et al., 2022). No high cross-loadings were identified across constructs, confirming discriminant validity. The measurement model thus met the standard psychometric criteria for reliability and validity, providing a robust foundation for the subsequent structural analysis.

Structural model results (PLS-SEM)

Table 2 summarizes the results of the structural equation modeling conducted using Partial Least Squares (PLS-SEM) with 5,000 bootstrap resamples.

The coefficient of determination (R^2) for each dependent variable demonstrates the explanatory strength of the model: R^2 (DM) = 0.30; R^2 (CX) = 0.55; R^2 (BP) = 0.62. Collectively, the model accounts for 62% of the variance in SMEs' business performance, indicating high predictive capability and practical relevance.

Discussion

Impact of customer orientation on digital maturity

Customer orientation emerged as a powerful driver of digital maturity ($β = 0.55$, $p < 0.001$). Firms that systematically gather and utilize customer feedback and behavioral analytics display higher levels of digital maturity. Case observations from leading Ha Noi-based retailers such as Pico and MediaMart reveal successful integration of ERP–CRM systems that unify customer data across digital and physical touchpoints, including websites, in-store systems, and hotlines. These firms demonstrate a shift from reactive customer management to proactive experience orchestration, emphasizing the transformative potential of customer-centric strategy.

TABLE 1: THE RELIABILITY AND VALIDITY OF CONSTRUCTS			
Latent Variable	Cronbach's alpha	Composite reliability	AVE
CO	0.874	0.913	0.724
DM	0.888	0.921	0.735
CX	0.842	0.889	0.675
BP	0.866	0.915	0.776

Source: The study result

Mediating role of digital maturity

Digital maturity acts as a bridge between customer orientation and CX, mediating their relationship. SMEs equipped with centralized, real-time data systems-tracking orders, inventory, and feedback-report on average 17% higher customer satisfaction scores than their non-adopting counterparts. This mediating effect suggests that while customer orientation provides the strategic direction, digital maturity operationalizes it through process integration and data transparency, enhancing customers' perception of service quality and responsiveness.

Customer experience as a predictor of business performance

Customer experience (CX) exhibited the strongest direct influence on business performance ($\beta = 0.67$, $p < 0.001$). SMEs offering seamless, fast, and personalized interactions-across online, mobile, and physical channels-achieved annual revenue growth between 20% and 25%. This finding corroborates prior studies (Accenture, 2024; Gartner, 2024) emphasizing that experiential differentiation is a primary determinant of customer loyalty and firm profitability in digital retail environments. The empirical evidence reinforces that superior CX is not merely an outcome but a strategic asset that sustains competitive advantage.

The indirect pathway from digital maturity to business performance via CX ($\beta = 0.31$, $p < 0.001$) highlights the "experience-centric value creation" mechanism. Technological investments-CRM systems, data platforms, and automation tools-generate economic value only when customers perceive tangible improvements in convenience, personalization, and trust. This phenomenon reflects a broader paradigm of digital humanization, wherein technology amplifies empathy and engagement rather than merely efficiency. SMEs that integrate analytics with empathy-driven design are therefore better positioned to translate digital capability into sustainable growth.

The findings underscore that the competitive edge of Ha Noi's consumer electronics SMEs increasingly depends on the strategic interplay between technology adoption and customer-centric value creation.

DATA-DRIVEN MARKETING STRATEGIES

Strategic orientation
Between 2025 and 2030, customer data will evolve into a core strategic asset shaping competitiveness and sustainability in Viet Nam's consumer electronics retail landscape. According to McKinsey & Company (2024), organizations that effectively leverage data-driven marketing achieve an average of 30% higher return on investment (ROI) compared with traditional marketing approaches. However, a survey by the Viet Nam Chamber of Commerce and Industry (VCCI, 2025) reveals that only 28% of SMEs in Ha Noi's consumer electronics sector currently deploy CRM systems capable of integrating transaction records, behavioral data, and post-purchase feedback. This gap highlights a pressing need for SMEs to embed analytics-based decision-making in their marketing infrastructure.

Strategic directions
Developing multi-source customer data collection systems; Transforming raw data into actionable marketing intelligence; Personalizing customer journeys and omnichannel content; Implementing continuous performance measurement and optimization mechanisms.

Specific solutions
(1). Establish a unified customer data platform (CDP)
A mini data lake integrating POS terminals, e-commerce websites, CRM platforms, and social media analytics can centralize customer information, including demographics, purchase history, engagement frequency, and promotional responsiveness. Appropriate and affordable platforms for SMEs include MISA AMIS CRM, GetFly, HubSpot Starter, and Zoho CRM. Such systems enable holistic 360° customer profiling that supports both marketing and sales functions.

(2). Leverage data analytics for marketing decisions
Utilizing visualization tools such as Google Data Studio, Microsoft Power BI, or Tableau Public, firms can continuously monitor performance metrics-traffic, conversion rates, customer retention, and ROI. Through segmentation and clustering analysis, businesses can classify customers into distinct profiles such as frequent buyers, price-sensitive customers, and technology upgraders. Integrating predictive analytics further refines demand forecasting, pricing strategies, and promotional timing, improving marketing agility.

(3). Personalize content and customer journeys
Deploying marketing automation systems across websites and Zalo Official Accounts (OA) can trigger individualized offers based on browsing history or cart

TABLE 2: THE RESULTS OF THE STRUCTURAL EQUATION MODELING					
Hypothesis	Path	β	t-value	p-value	Conclusion
H1	CO → DM	0.55	9.12	<0.001	Supported
H2	CO → CX	0.23	3.41	<0.01	Supported
H3	DM → CX	0.46	7.18	<0.001	Supported
H4	CX → BP	0.67	10.52	<0.001	Supported
H5	DM → BP (indirect via CX)	0.31	4.89	<0.001	Supported

Source: The study result

activity. SMEs should design detailed customer journey maps for core product categories-televisions, refrigerators, washing machines, and small home appliances-to identify key decision touchpoints. Incorporating AI-based recommendation engines ("frequently bought together" or "similar product" suggestions) enhances cross-selling opportunities and perceived relevance.

(4). Enhance interactive and personalized communication

Integrating CRM data with social listening insights from Zalo, Facebook, and TikTok allows firms to deliver localized, hyper-relevant content. Remarketing campaigns aimed at customers with abandoned carts and digital loyalty programs offering e-vouchers, membership points, and tiered benefits can strengthen engagement and encourage repeat purchases.

(5). Develop a marketing data feedback loop

An integrated Marketing KPI Dashboard should track metrics such as: Cost per acquisition (CPA); Customer lifetime value (CLV); Net promoter score (NPS) and Return on marketing investment (ROMI)

Quarterly evaluations of these indicators enable data-driven budget reallocation toward high-value segments and refinement of future campaign strategies. Integrating post-purchase surveys into this system closes the loop between CX and marketing planning, fostering continuous improvement.

Policy recommendations

To sustain a data-driven transformation ecosystem among SMEs, supportive institutional mechanisms are required:

- *Data - sharing incentives:* Data-Sharing incentives: Establish a Ha Noi consumer electronics data Hub, jointly managed by the Department of industry and trade, the Viet Nam Chamber of Commerce and Industry (VCCI), and the Ha Noi Consumer Electronics Association. The hub will promote anonymized data sharing, enabling retailers to conduct benchmarking and collaborative data analytics, thereby enhancing overall industry performance.

- *Capacity - building programs:* Launch joint MIC-NEU-MISA training initiatives to enhance SMEs' proficiency in data acquisition, visualization, and predictive modeling for marketing applications.

- *Fiscal and technological support:* Offer corporate tax reductions of up to 10% and preferential financing for enterprises investing in CRM systems or proprietary data analytics infrastructure.

Collectively, these strategies advance the digital maturity and marketing intelligence of Ha Noi's consumer electronics SMEs, positioning them to compete effectively in a data-intensive regional marketplace.

CONCLUSION

This study emphasizes the essential role of the CCA in promoting DX and DDM among SMEs in Ha Noi's consumer electronics sector. TOE, RBV, the research develops a structural model with 4 constructs: CO, DM, CX, and BP. Findings from the PLS-SEM analysis show that CO significantly enhances DM, helping firms adopt digital tools and data-driven practices more effectively. DM also mediates the relationship between CO and CX, indicating that customer-oriented firms deliver better experiences when supported by strong digital capabilities. CX is the strongest predictor of BP, reinforcing that superior customer experiences drive sustainable performance. Additionally, DM indirectly improves BP through CX, highlighting that technology and customer insight jointly shape value creation.

Managerial implications include a proposed DDM framework featuring a Customer Data Platform (CDP), predictive analytics, omnichannel personalization, and continuous data feedback to support ongoing improvement.

At the policy level, the study recommends establishing a Ha Noi Consumer Electronics Data Hub, promoting analytics training, and offering incentives for CRM/CDP adoption to strengthen SMEs' digital competitiveness. In essence, effective DX requires not only technology adoption but strategic alignment, a data-driven culture, and human-centered experience design.

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