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A Meta-Synthesis of the Drivers and Impacts of Customer Knowledge Value Creation in Online Shopping Websites

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ABSTRACT

In the digital transformation era, customer engagement in online shopping has become a key pillar of success for e-commerce businesses. The researcher analyzed the results and findings of previous researchers using a systematic review and meta-synthesis approach and identified the effective factors by performing the 7 steps of the Sandelowski and Barroso method. Out of 198 articles, 35 articles were selected based on the CASP method. The validity of the analysis was also confirmed by the value of the Holstey coefficient, Scott's p-coefficient, Cohen's kappa index, and Krappendorff's alpha. In this context, in order to measure reliability and quality control, the transcript method was used, and its value was identified at the excellent level of agreement for the identified indicators. The results of analyzing the collected data in MAXQDA software resulted in the identification of model codes. The data consisted of findings from 35 peer-reviewed studies published between 2010 and 2023, selected through purposeful sampling. The findings reveal that customer engagement comprises three main dimensions: cognitive, emotional, and behavioral, each containing key components such as mental focus, enthusiasm, active participation, and enjoyment. Moreover, effective engagement is associated with increased loyalty, repurchase intention, and brand advocacy. The results of this study can serve as a foundation for designing digital marketing strategies, improving user experience, and developing interactive models in online sales platforms. Additionally, the proposed framework offers a basis for further empirical research and advanced modeling in customer engagement. ©authors.

1. Introduction

In the evolving digital commerce landscape, online shopping has transitioned from a marginal consumption method to a central component of modern consumer behavior (Stofkova et al., 2022). The expansion of internet access, the development of mobile technologies, and the rapid advancement of e-commerce platforms have enabled consumers to interact with brands in multifaceted and dynamic ways (Rosário & Raimundo, 2021). Among the various concepts supporting this transformation, customer engagement has emerged as a critical factor in understanding online consumer behavior (Roy et al., 2022). Customer engagement, a multidimensional concept encompassing cognitive, emotional, and behavioral dimensions, goes beyond mere transactional interactions and includes ongoing and meaningful relationships between consumers and online platforms (Brodie et al., 2019).

Online shopping websites, now forming the backbone of digital retail ecosystems, increasingly leverage engagement strategies to foster customer loyalty, enhance user experiences, and build long-term relationships (Khan et al., 2023). In contrast to traditional marketing paradigms that primarily focus on customer acquisition and conversion, today's emphasis has shifted toward cultivating engagement—an approach that influences various outcomes, including purchase intention, word-of-mouth behavior, and brand advocacy (Islam et al., 2021). In this context, identifying the drivers and consequences of customer engagement has attracted significant attention from researchers, with numerous studies striving to examine the antecedents and outcomes of this phenomenon within the online shopping environment (Liang & Gao, 2024; Xiong et al., 2024).

Despite the growing academic and practical focus on customer engagement in online shopping environments, conceptual fragmentation, and theoretical ambiguity remain fundamental (Susanto et al., 2023; Zhang & Zhu, 2022). Various researchers have proposed multiple models and frameworks to explain the dynamics of

customer engagement. Nevertheless, no comprehensive and integrated synthesis exists to consolidate diverse findings and provide a unified understanding of its drivers and outcomes. Studies often differ in their operational definitions, methodologies, and contextual settings, resulting in inconsistent findings and a lack of theoretical coherence (Chi et al., 2022). Moreover, while some research emphasizes technological capabilities and platform interactivity as key factors, others focus on psychological aspects such as trust, satisfaction, and perceived value, leading to a fragmented body of knowledge (Kumar & Ratten, 2024).

In the realm of e-commerce, particularly within online shopping websites, Customer Knowledge Value Creation (CKVC) has emerged as a critical factor for enhancing customer experience, increasing sales, and gaining competitive advantage (Gao et al., 2024). The key drivers of CKVC in this context include interactive digital engagement, content personalization, smart recommendation systems, continuous customer feedback, and the application of data analytics and artificial intelligence. These drivers enable online platforms not only to collect behavioral and preference-based data from users but also to transform that data into actionable knowledge for marketing and product development decisions. Moreover, a participatory customer culture—where users actively contribute through reviews, suggestions, and shared experiences—plays a major role in value co-creation. This collaborative process strengthens the relationship between customers and brands and turns knowledge sharing into a two-way interaction (Dessart et al., 2016; Hussain et al., 2021).

On the other hand, the impacts of customer knowledge value creation on online shopping platforms are evident in areas such as improved customer satisfaction, stronger brand loyalty, higher conversion rates, better product and service design, and increased digital word-of-mouth marketing (Deshmukh et al., 2025; Vashishth et al., 2025). When customers feel that their input helps shape the shopping experience, they develop a deeper sense of ownership and emotional

attachment to the brand. Additionally, insights derived from customer knowledge support real-time optimization of sales strategies, pricing models, and customer service operations (Adom, 2024). As a result, businesses that build integrated structures to collect, analyze, and utilize customer knowledge effectively are better positioned to succeed in competitive digital markets. Ultimately, CKVC serves not only as an operational benefit but also as a strategic approach to adapting to market changes and evolving customer preferences (Nguyen et al., 2024)

Although the literature on customer engagement in the context of online shopping has expanded significantly in recent years, it still exhibits several fundamental shortcomings. First, there is a lack of integrative reviews that synthesize the findings of diverse empirical studies to provide a more comprehensive understanding of this phenomenon. Most existing research adopts a narrow approach, focusing only on individual variables such as trust (Honora et al., 2023), interactivity or satisfaction, without considering the relationships among these factors or their placement within a broader conceptual framework (Sashi, 2021; So et al., 2016). This fragmented approach limits the explanatory power of individual studies and poses a barrier to the development of cumulative knowledge. (Mareya et al, 2025)

Second, previous meta-analytic studies have primarily focused on quantitative data, thereby overlooking rich qualitative insights that reveal the complexity of consumer behavior in digital environments. Qualitative studies, which often offer nuanced understandings have been underutilized in the development of theoretical models. This lack of methodological diversity limits researchers' ability to produce comprehensive models that reflect customer engagement's full range of drivers and outcomes (Lim et al., 2022). Third, contextual diversity makes synthesizing and integrating existing research more challenging. Studies conducted across different cultural, technological, or industrial settings often yield varying results, raising

questions about the generalizability and applicability of existing models. This inconsistency highlights the need for a meta-synthesis approach that can transcend individual studies' limitations and offer a more inclusive and universal framework (Sandelowski et al., 2007).

To address these challenges, the primary aim of this study is to develop a comprehensive model of the drivers and outcomes of customer engagement on online shopping websites through a rigorous meta-synthesis of existing qualitative research. The meta-synthesis method, which involves integrating and systematically interpreting qualitative findings from multiple studies, is a powerful approach to theory development. Unlike traditional meta-analyses focusing on statistical aggregation, meta-synthesis emphasizes conceptual depth and theoretical innovation, making it particularly suitable for examining complex concepts such as customer engagement (Habersang & Reihlen, 2024)

This study is innovative in several ways. First, it is one of the few efforts that employ meta-synthesis in the context of customer engagement in e-commerce, thus offering a new methodological perspective to this field. Second, its goal is to develop an integrative model that identifies the key drivers and outcomes of engagement and elucidates the relationships among these variables. This comprehensive approach provides a deeper understanding of how engagement operates within the online shopping experience. Third, the study aims to enhance the practical applicability of customer engagement models by offering actionable insights that can inform platform design, marketing strategies, and customer relationship management. The proposed model has significant applications. For practitioners, it can serve as a diagnostic tool for evaluating and enhancing engagement strategies on e-commerce platforms. For researchers, it provides a solid theoretical foundation for future empirical studies. For system designers, it offers guidance on user interface features that deepen customer engagement. Ultimately, this study aims to enhance both the theoretical knowledge and

practical understanding of customer engagement in the digital retail environment.

2. Literature Review

Definitions and Dimensions of Customer Engagement

Customer engagement has become a central framework for understanding consumer behavior in online shopping environments. This multidimensional concept encompasses cognitive, emotional, and behavioral components, extending the customer's relationship with the brand beyond mere transactional exchanges (Brodie et al., 2019). The expansion of digital technologies and e-commerce platforms has transformed how consumers interact with businesses, increasing researchers' interest in customer engagement's underlying factors and outcomes (Roy et al., 2022). In online retail, customer engagement is increasingly recognized as a key determinant of brand loyalty, advocacy, and lifetime value (Hollebeek et al., 2019). These perspectives have led to a growth in both empirical and conceptual studies in this area; however, there remain significant inconsistencies in definitions, measurements, and theoretical frameworks (Chi et al., 2022). Therefore, a comprehensive synthesis is necessary to achieve a unified understanding.

The conceptualization of customer engagement varies significantly across studies. Early definitions emphasized psychological states of involvement and engagement (Pansari & Kumar, 2017), whereas newer frameworks consider customer engagement as a dynamic process involving ongoing interactions and experiences (Hollebeek et al., 2021). Most contemporary models agree on the three-dimensional nature of the concept: cognitive (attention, interest), emotional (excitement, pleasure), and behavioral (participation, sharing) (Dessart et al., 2016; Kumar et al., 2024). Several measurement scales have been proposed, including Hollebeek et al.'s (2014) customer engagement scale and Vivek et al.'s (2012) consumer engagement framework. These tools emphasize different aspects, such as interactivity, relational exchanges, and brand experience, which has

led to conceptual fragmentation (Sashi, 2021; So et al., 2016).

Key Drivers and Outcomes of Customer Engagement

Various contextual factors are key drivers of customer engagement in online purchasing. Technological factors, such as platform interactivity, ease of use, and system reliability, significantly impact customer engagement (Islam et al., 2021). Interactive features such as real-time chat, user-generated content, and responsive design enhance engagement levels (Utami et al., 2022), while user-friendly interfaces increase trust and satisfaction (Liang & Gao, 2024; Susanto et al., 2023). Psychological constructs like trust, perceived value, and satisfaction are consistently recognized as key drivers that increase customers' emotional investment (Anoura et al., 2023; Nguyen et al., 2024). Gao et al. (2023) highlighted the mediating role of satisfaction between service quality and engagement, while Mareya et al. (2025) identified emotional satisfaction as a core driver. The role of personalization through AI is also prominent. Deshmukh et al. (2025) and Vashishth et al. (2025) found that personalized content and recommendation systems significantly boost emotional and behavioral engagement. Social engagement through online communities and integration with social media also strengthens customer engagement, as Brodie et al. (2019) and Ghaffari et al. (2022) emphasized co-creation and knowledge sharing as vital drivers.

Customer engagement has been linked to positive outcomes impacting consumer behavior and company performance. Behavioral outcomes include increased loyalty, repurchase intention, and brand advocacy (Khan et al., 2023; Roy et al., 2022). Islam et al. (2021) reported that customer engagement positively impacts electronic word-of-mouth behavior, especially in interactive platforms. Attitudinal outcomes such as brand satisfaction, commitment, and trust are widely recognized as subsequent effects of customer engagement (Hussain et al., 2021)

found that customer engagement enhances satisfaction, increasing brand value and loyalty. One emerging outcome of customer engagement is customer participation in value co-creation, where consumers help the brand and other users by providing feedback and insights (Dessart et al., 2016; Ghaffari et al., 2022).

Furthermore, sustained engagement positively affects business metrics, including increased customer lifetime value, customer retention, and platform profitability (Deshmukh et al., 2025; Zhang & Zhu, 2022).

Methodological Trends in Customer Engagement Research

Methodologically, most studies on customer engagement have adopted quantitative approaches, often using Structural Equation Modeling (SEM) to test hypotheses and establish statistical relationships (Chi et al., 2022). Despite their high precision, these methods often overlook engagement's subtle, contextual, and experiential aspects (Lim et al., 2022). Qualitative approaches, despite their high potential for uncovering more profound insights into the motivations, behaviors, and relational dynamics of consumers, have still been less frequently utilized (Ghaffari et al., 2022; Mareya et al., 2025; Vehmas et al., 2024). Existing reviews primarily rely on narrative or statistical syntheses, with few employing meta-syntheses to integrate qualitative findings (Habersang & Reihlen, 2024). This lack of methodological diversity has hindered the development of comprehensive, theory-driven models.

Theoretical Gaps and Emerging Trends in Customer Engagement Research

Theoretical gaps and inconsistencies continue to pose challenges for this field. One ongoing issue is the fragmented conceptualization of customer engagement, with no consensus on the core dimensions or standardized measurement criteria (Nguyen et al., 2024; Chi et al., 2022). Many models focus only on the antecedents or consequences in isolation, lacking a comprehensive view of the entire engagement process (Honora et al., 2023;

Khan et al., 2023). Moreover, the factors influencing customer engagement and its outcomes often vary significantly across cultural and industrial contexts, making it difficult to generalize the findings (Utami et al., 2022; Susanto et al., 2023). Most existing frameworks do not adequately reflect engagement's dynamic and processual nature, and longitudinal studies remain rare (Rosário & Raimundo, 2021). Furthermore, customer engagement research primarily relies on established frameworks such as the Technology Acceptance Model (TAM) and Stimulus-Organism-Response (S-O-R), which may not fully capture the multidimensionality of engagement in today's e-commerce environments (Lim et al., 2022).

Recent trends in customer engagement research indicate an increasing focus on engagement through technology, especially utilizing artificial intelligence, chatbots, and personalization tools (Deshmukh et al., 2025; Vashishth et al., 2025). While these innovations enhance the user experience, debates about balancing automation and authenticity persist (Liang & Gao, 2024). The COVID-19 pandemic highlighted the importance of customer engagement, accelerating digital shopping behaviors, and transforming engagement strategies (Xiong et al., 2024; Zhang & Zhu, 2022). Meanwhile, emotional versus rational engagement models remain contested, with researchers calling for integrated frameworks encompassing emotional and cognitive components (Dessart et al., 2016; Hollebeek et al., 2021). Interdisciplinary integration is also on the rise, with insights from psychology, sociology, and information systems enriching customer engagement theory, although this can challenge the theoretical coherence.

Given these gaps and emerging trends, the present study aims to address conceptual, methodological, and theoretical deficiencies using the method of meta-synthesis based on the framework proposed by Sandelowski et al. (2007). This approach facilitates the interpretative integration of diverse qualitative findings to develop a comprehensive customer engagement model

in online shopping. By introducing methodological pluralism, this study enhances conceptual integration by mapping the pathway between antecedents and outcomes through the key dimensions of engagement, providing actionable insights for practice. Ultimately, this research contributes to the theoretical advancement of the customer engagement literature by presenting a robust, context-aware, evidence-based framework, paving the way for future research and practice.

The present study seeks to address the identified gaps and unresolved issues through the meta-synthesis approach, guided by the framework of Sandelowski et al. (2007). This method enables the interpretative integration of diverse qualitative findings to develop a comprehensive conceptual model of customer engagement in online shopping.

Digital technologies have become one of the vital elements for businesses in customer interaction, sales, and other marketing-related activities. Despite widespread attention in recent years, managers continue to face challenges in understanding the interactive behavior of users towards these digital technologies. In this regard, Srivastava et al. (2025) conducted a study titled "Digital Customer Engagement: A Systematic Literature Review and Research Agenda." The study aimed to provide a comprehensive overview of the current state by systematically reviewing the literature on digital customer engagement and examining 139 relevant articles. This study analyzed theoretical approaches, methodologies, research contexts, contextual factors, drivers, and outcomes of digital customer engagement. It also listed prominent authors, reputable journals, key articles, and active countries in this field. Finally, the authors proposed a comprehensive framework for better understanding digital customer engagement and outlined important directions for future research.

Gupta and Mukherjee (2025), in their study titled "Exploring the Factors Influencing Customer Interaction with Voice Interfaces in Electronic Retailing," addressed the challenges that online retailers face in

attracting, engaging, and retaining customers. One of the innovative solutions to these challenges is using voice interfaces, which, as a pervasive and innovative tool, offers users a hands-free and more convenient online shopping experience. However, this type of interface significantly differs from the text-based interface that consumers are familiar with in terms of nature and user experience.

In this study, the customer experience of using voice interfaces in the product search and selection process on e-commerce platforms was examined, and its impact on customer engagement and increased use of this technology was analyzed. Data collection involved 34 in-depth interviews with executive MBA students, and data analysis was conducted using the grounded theory approach and thematic analysis. The findings revealed that two factors, "customer satisfaction" and "surprise experience," play a reinforcing role in customer engagement and widespread use of voice interfaces, while "perceived risk" and "behavioral laziness" are among the deterrent factors. This study indicates that voice interfaces are transforming the customer experience in online shopping, and how users interact with this type of interface directly impacts their engagement with the platform and their willingness to reuse this technology. The findings are also consistent with dual-process theory, showing that facilitating and deterrent factors can independently and simultaneously influence consumer behavior. This research provides a practical framework for better understanding customer interaction with voice interfaces in e-commerce.

3. Method

The present study, in terms of identifying the components of the Drivers and Impacts of Customer Knowledge Value Creation in Online Shopping Websites, is a qualitative study in terms of its general approach and has been conducted with the library research method and the meta-synthesis technique in the field of intelligent manufacturing. Meta-synthesis is one of the types of methods under the meta-study that, through a systematic review of sources, extracts,

evaluates, combines and, if necessary, statistically summarizes research that has previously been conducted on a specific subject area. In fact, in meta-synthesis, information and findings extracted from other studies with a related and similar topic are reviewed and analyzed. In this context, the data collected from these studies are qualitative and not quantitative. As a result, the sample for meta-synthesis is selected and formed based on their relevance to the research question. Meta-synthesis is not just an integrated review of the qualitative principles of the case or the analysis of secondary and primary data from selected studies, but rather an analysis of the findings of these studies. In other words, meta-synthesis is the combination of

interpretations of the original data from selected studies. ATLAS TI software was used for analysis.

4. Findings

Phase 1: Qualitative Phase – Meta-Synthesis Method

The first step in Sandolowski and Barroso's method is to formulate research questions. These questions can generally be formulated based on the four parameters of what, who, when, and how. After the research questions have been formulated based on the research objective, the systematic literature review phase begins. Table 1 shows the answers to these fundamental and essential questions related to the meta-synthesis method:

Table 1. Research questions

Research questions	
identifying the components of the Drivers and Impacts of Customer Knowledge Value Creation in Online Shopping Websites	(What)
Various works including books, articles, reports	(Who)
Including all works from 2010 to 2023	(When)
Thematic review, identification and note-taking, key points, concept analysis	(How)

Table 2. Introduction of suitable keywords for performing the second stage of the meta-synthesis method

Latin keywords searched
Customer Knowledge
Value Creation in Online Shopping Websites

Phase 2: Quantitative Phase – Survey Method

Secondary data called past documents are used to collect research data. As stated earlier, the research databases of interest were the two leading databases Scopus and Web of Science, and in these two databases, special focus was placed on the following set of publishing databases:

Emerald insight- Springer Link- Science Direct- Taylor & Francis Online- SAGE journals- Wiley Online Library In addition, in the field of Persian articles, the database of the Jihad Daneshgahi Scientific Information Center and the Comprehensive Humanities Portal were also considered.

Phase 3: Searching and selecting texts

Table 3 shows the steps taken to filter the extracted articles. Based on this table, four stages were taken to filter the articles extracted from the literature, the last stage of which was based on the opinions of 5 expert

observers in this study. In order to assess the final quality of the articles based on the approach introduced below, these experts provided their opinions for each final screened article, and articles that scored lower than the applied threshold were eliminated from the process.

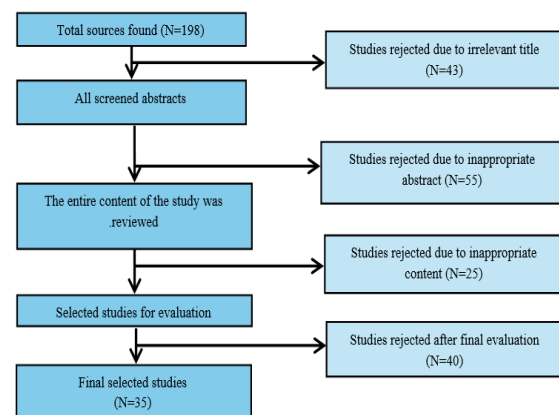


Figure 1. Process of selecting articles

After eliminating studies that are not relevant to the research objectives and questions, the researcher should assess the methodological quality of the studies. The goal of this step is to eliminate studies that the researcher does not have confidence in the findings presented in them. A commonly used tool for assessing the quality of initial qualitative research studies is the “Critical Evaluation Skills Program,” which helps determine the rigor, validity, and significance

of qualitative research studies by asking ten questions.

These questions focus on the following: 1. Research objectives 2. Methodological rationale 3. Research design 4. Sampling method 5. Data collection 6. Reflectivity (which refers to the relationship between the researcher and participants) 7. Ethical considerations 8. Rigor of data analysis 9. Clear and concise statement of findings 10. Value of the research.

Table 3. Selected articles

	Topic	Code
44	Assessing Customer Service for Sustainable Micro, Small, and Medium Entrepreneurial Firms: Lessons from Ghana	S01
42	A meta-analysis of customer engagement behaviour	S02
38	Actor engagement in networks: Defining the conceptual domain	S03
39	Capturing consumer engagement: duality, dimensionality and measurement	S04
43	Consumers’ motivations for adopting a vegan diet: A mixed-methods approach	S05
42	Exploring drivers of customer engagement with voice interface in E-retail	S06
41	Mobile app vs. desktop browser platforms: The relationships among customer engagement, experience, relationship quality and loyalty intention	S07
40	Digital communication, value co-creation and customer engagement in business networks: a conceptual matrix and propositions	S08
38	Digital customer engagement: A systematic literature review and research agenda.	S09
32	The impact of the internet of things on the perceived quality and customer involvement of smart product-service systems	S10
40	Enhancing customer experience through AI-enabled content personalization in e-commerce marketing.	S11
43	Artificial intelligence and family businesses: a systematic literature review	S12
39	Understanding consumer attitudes towards sustainable business models—a qualitative study with finnish consumers	S13
40	Shopping behavior in the context of the digital economy.	S14
40	Entrepreneurial orientation and performance of SMEs: the roles of marketing capabilities and social media usage	S15
44	The role of interactivity on customer engagement in mobile e-commerce applications	S16
32	How phygital customers’ experience transforms the retail banking sector? Examining customer engagement and patronage intentions	S17
32	Impact of COVID-19 pandemic on online consumption share: Evidence from China’s mobile payment data	S18
31	Past, present, and future of customer engagement.	S19
37	The rise of online group purchases in the age of pandemics.	S20
31	The power of emotions: Leveraging user generated content for customer experience management	S21
33	Advancing qualitative meta-studies (QMS): Current practices and reflective guidelines for synthesizing qualitative research	S22
32	Commentary on progressing understanding of online customer engagement: recent trends and challenges	S23
38	Exploring customer experience, commitment, and engagement behaviours.	S24
31	Promoting business model innovation through social media strategic capability: A moderated mediation model	S25
39	Customer engagement: the construct, antecedents, and consequences.	S26
40	Consumer brand engagement in social media: Conceptualization, scale development and validation	S27
41	Consumer Experiences of the Australian Stepped Care Model in Primary Mental Health Care: A Qualitative Study	S28
44	Consumer marketing strategy and E-commerce in the last decade: a literature review	S29
32	The role of customer engagement in building consumer loyalty to tourism brands	S30
32	What drives customer engagement after a service failure? The moderating role of customer trust.	S31
40	SD logic–informed customer engagement: integrative framework, revised fundamental propositions, and application to CRM	S32
40	The impact of service innovation on customer satisfaction and customer loyalty: a case in Vietnamese retail banks	S33
42	Metaverse for enhancing customer loyalty: effective strategies to improve customer relationship.	S34
44	Rise of the machines? Customer engagement in automated service interactions	S35

Phase 4: Data extraction

This stage includes reviewing the remaining articles and extracting texts for coding in the next stage. This step focuses on separating the results and outputs and interpretations of these outputs, along with the researchers' final discussion and conclusion. In this stage, 35 articles were entered into the MAXQDA software and, for the purpose of initial review, parts of the study articles were randomly and selectively coded to familiarize the researcher with the available data. In this way, the researcher became familiar with the general nature of the discussion and the atmosphere that prevailed in it.

Phase 5: Analyzing Qualitative Findings

During the analysis, the researcher searches for themes that have emerged among the existing studies in the meta-synthesis. This is known as (thematic review). Once the themes have been identified and specified,

the researcher forms a classification and places similar and related categories under the theme that best describes it. The themes provide the basis for creating explanations, patterns, and theories or hypotheses. In this study, first, all the factors extracted from the studies were considered as identifiers and then, by considering the meaning of each of them, the identifiers were defined in a similar concept; then, similar concepts were grouped into explanatory categories in order to identify the explanatory axes of the research indicators in the form of main and secondary components of the research.

Phase 6: Quality Control of Analysis

To assess the reliability of the meta-synthesis, a selected document was provided to one of the experts. After the assessment, the kappa coefficient was calculated to be 0.821. A kappa coefficient above 0.6 is desirable.

Table 4. Agreement Coefficient Values of Customer Engagement Drivers

Measure	Value	Standard Deviation	Significance Level
Cohen's Kappa Coefficient	0.821	0.065	0.000
Number of Valid Cases	198		

Given that the significance value is smaller than 0.05, the assumption of independence among the extracted codes is rejected, indicating that the coding demonstrates suitable reliability.

Phase 7: Presentation of the research report and findings

In this stage, all coding outputs have been determined based on Shannon entropy.

Modeling has also been carried out. The Shannon Entropy method was employed to determine the relative importance of the concepts extracted from qualitative studies. This approach calculates the information load and degree of uncertainty for each code, allowing the researcher to compute the concepts' final weight and importance coefficient and rank them accordingly.

Table 5. Coding and ranking of customer engagement drivers

Variable	Concepts	Codes	Frequency	$\sum PI * LNpij$	Uncertainty Ej	Importance Coefficient Wij	Overall Rank	Concept Rank	Variable Rank
Customer Assets	Brand Attachment	Pride	8	-2.0794	0.3979	0.0066	20	11	2
		Positive Feeling	8	-2.0794	0.3979	0.0066	20		
		Positive Thinking	11	-2.3979	0.4589	0.0075	10		
	Brand Psychological Ownership	Sense of Belonging	6	-1.7918	0.3429	0.0057	32	14	
		Enhancing Brand Status	6	-1.7918	0.3429	0.0057	32		
		Sharing in Brand Success	7	-1.9459	0.3724	0.0061	28		
	Satisfaction	Product Satisfaction	10	-2.3026	0.4406	0.0072	12	6	
		Perceived Value of Purchase	12	-2.498	0.469	0.0075	5		
	Customer Experience	Enjoyable Shopping	11	-2.3979	0.4589	0.0075	10	4	
		Immediate Problem Resolution	11	-2.3979	0.4589	0.0075	10		

	Customer Trust	Keeping Updated via Online Shopping	11	-2.3979	0.4589	0.0075	10	1	
		Data Confidentiality	10	-2.3026	0.4406	0.0072	12		
		Website Information Credibility	12	-2.498	0.469	0.0075	5		
	Customer Motivation	Website Commitment	14	-2.598	0.521	0.008	1	5	
		Entertainment	10	-2.3026	0.4406	0.0072	12		
		Keeping Updated	12	-2.498	0.469	0.0075	5		
		Purchasing High-Quality Products	14	-2.598	0.521	0.008	1		
Purchasing Affordable Products	8	-2.0794	0.3979	0.0066	20				
Company Assets	Task-Based Customer Engagement	Engagement in Brand Campaigns	8	-2.0794	0.3979	0.0066	20	9	3
		Using Customer Club Discounts	13	-2.5649	0.4908	0.008	4		
	Brand Association	Brand Uniqueness	8	-2.0794	0.3979	0.0066	20	13	
		Brand Name Familiarity	6	-1.7918	0.3429	0.0057	32		
		Brand Sense of Calm	6	-1.7918	0.3429	0.0057	32		
	Brand Equity	Brand Modernity	8	-2.0794	0.3979	0.0066	20	12	
		Repurchasing from the Brand	10	-2.3026	0.4406	0.0072	12		
		Brand as First Choice	8	-2.0794	0.3979	0.0066	20		
	Brand Reputation	Encouragement to Purchase Brand	12	-2.498	0.469	0.0075	5	8	
		Following Brand on Social Media	13	-2.5649	0.4908	0.008	4		
Brand Recognition		8	-2.0794	0.3979	0.0066	20			
Platform Features (Website)	Financial	Cost-Effectiveness of Online Shopping	11	-2.3979	0.4589	0.0075	10	3	1
		Sense of Fairness in Online Transactions	12	-2.498	0.469	0.0075	5		
	Informational	Up-to-Date Online Stores	14	-2.598	0.521	0.008	1	10	
		Easy Product Comparison	6	-1.7918	0.3429	0.0057	32		
		Easy Product Access	12	-2.498	0.469	0.0075	5		
	Product and Service Value	High-Quality Products in Online Stores	10	-2.3026	0.4406	0.0072	12	2	
		Reliable Products in Online Stores	14	-2.598	0.521	0.008	1		
		Timely and High-Quality Delivery	12	-2.498	0.469	0.0075	5		
		After-Sales Services	12	-2.498	0.469	0.0075	5		
		Easy Payment	12	-2.498	0.469	0.0075	5		
	Website Security and Environment	Privacy Protection	10	-2.3026	0.4406	0.0072	12	6	
		Information Security	10	-2.3026	0.4406	0.0072	12		
		Data Protection Notice	12	-2.498	0.469	0.0075	5		
Learning Purchase Methods		12	-2.498	0.469	0.0075	5			

The findings obtained from the meta-synthesis analysis regarding the drivers of customer engagement are presented in Table 6.

Table 6. Meta-synthesis analysis findings based on significance (Customer Engagement Drivers)

Main Drivers by Importance	Concepts by Importance
Platform Features (Website)	Product and Service Value
	Financial
	Website Security and Environment
	Informational
	Customer Trust
Customer Assets	Customer Experience
	Customer Motivation
	Satisfaction
	Brand Attachment
	Brand Psychological Ownership
Company Assets	Brand Reputation
	Task-Based Customer Engagement
	Brand Equity
	Brand Association

The findings related to the second research question, "What are the dimensions and components of customer engagement in online businesses?"

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Coding was conducted at three levels: open, axial, and selective. The Cohen’s Kappa coefficient for assessing the reliability of the codes was calculated at 0.729 (Table 7), indicating a high level of agreement between evaluators.

Table 7. Agreement Coefficient Values of Customer Engagement Dimension

Measure	Value	Standard Deviation	Significance Level
Cohen’s Kappa Coefficient	0.729	0.069	0.000000
Number of Valid Cases	28		

In this stage, Shannon entropy was used to rank the concepts, similar to the approach in the first question. Table 8 presents the ranking and importance coefficients of the codes related to customer engagement drivers.

Table 8. Coding and Ranking of Customer Engagement Dimension

Variable	Concepts	Codes	Frequency	$\Sigma PI *LNpij$	Uncertainty E_j	Importance Coefficient W_{ij}	Overall Rank	Concept Rank	Variable Rank	
Emotional	Pleasure	Brand Enjoyment	12	-2.498	0.469	0.0075	5	3	2	
		Positive Feeling	13	-2.5649	0.4908	0.008	4			
		Sense of Pride	11	-2.3979	0.4589	0.0075	10			
	Enthusiasm	Enthusiastic Brand Use	12	-2.498	0.469	0.0075	5	5		
		Attractiveness of Brand Use	11	-2.3979	0.4589	0.0075	10			
	Social Relationships	Social Relationships with Brand	Enjoyment of Social Relationships with Brand	8	-2.0794	0.3979	0.0066	20		9
Engagement of Peers with Brand			8	-2.0794	0.3979	0.0066	20			
Cognitive	Cognitive Processing	Curiosity Toward Product	9	-2.1972	0.4205	0.0069	16	10	3	
		Stimulation to Learn About Product	8	-2.0794	0.3979	0.0066	20			
	Absorption	Time Allocation for Product	7	-1.9459	0.3724	0.0061	28	6		
		Enjoyment of Spending Time on Product	12	-2.498	0.469	0.0075	5			
		Attraction to Product	10	-2.3026	0.4406	0.0072	12			
	Attention	Attention to All Product Aspects	Attention to All Product Aspects	8	-2.0794	0.3979	0.0066	20		7
			Enjoyment of Focusing on Product	10	-2.3026	0.4406	0.0072	12		
Behavioral	Consumption	Following Product’s social media	11	-2.3979	0.4589	0.0075	10	2	1	
		Watching Content of Preferred Brand	14	-2.598	0.521	0.008	1			
		Following Preferred Brand’s Website	12	-2.498	0.469	0.0075	5			
	Engagement	Engagement	Like	14	-2.598	0.521	0.008	1		1
			Comment	14	-2.598	0.521	0.008	1		
			Sharing	13	-2.5649	0.4908	0.008	4		
			Reaction on social media	12	-2.498	0.469	0.0075	5		
	Value Creation	Content Creation	10	-2.3026	0.4406	0.0072	12	4		

		Collaboration in Product Improvement	14	-2.598	0.521	0.008	1		
		Feedback on Product	12	-2.498	0.469	0.0075	5		

The findings obtained from the meta-synthesis analysis regarding the dimensions of customer engagement are presented in Table 9.

Table 9. Customer Engagement Dimensions

Concepts by Importance	Main Factors by Importance
Behavioral	Engagement
	Consumption
	Value Creation
Emotional	Pleasure
	Enthusiasm
	Social Relationships
Cognitive	Absorption
	Attention
	Cognitive Processing

The findings related to the third research question, "What are the outcomes of customer engagement in online business. Coding was conducted at three levels: open, axial, and selective. Cohen's kappa

coefficient for assessing coding reliability was calculated as 0.687 (Table 10), indicating a high level of agreement among evaluators.

Table 10. Agreement Index Values of Customer Engagement Outcomes

Measure	Value	Standard Deviation	Significance Level
Cohen's Kappa Coefficient	0.687	0.069	0.000000
Number of Valid Cases	28		

In this stage, Shannon entropy was used to analyze and rank the concepts, similar to the approach taken for the first question. Table

11 presents the ranking and importance coefficient of the codes related to the drivers of customer engagement.

Table 11. Coding and Ranking of Customer Engagement Outcomes

Variable	Concept	Codes	Frequency	$\sum P_i * L_i N_{pij}$	Uncertainty E_j	Importance Coefficient W_{ij}	Overall Rank	Rank in Concepts	Variable Rank
Customer Value	Economic Value	Award giveaway	12	-2.498	0.469	0.0075	5	3	2
		Free shipping	13	-2.5649	0.4908	0.008	4		
		Reduced purchase cost	11	-2.3979	0.4589	0.0075	10		
	Cognitive Value	Increased knowledge	12	-2.498	0.469	0.0075	5	5	
		Excellent understanding	11	-2.3979	0.4589	0.0075	10		
		Understanding brand differences	8	-2.0794	0.3979	0.0066	20		
	Emotional Value	Good feeling	8	-2.0794	0.3979	0.0066	20	12	
		Sense of pride and honor	9	-2.1972	0.4205	0.0069	16		
		Sense of brand attachment	8	-2.0794	0.3979	0.0066	20		
	Social Value	Social identity	7	-1.9459	0.3724	0.0061	28	8	
The high social status associated with the brand		12	-2.498	0.469	0.0075	5			
Influence in society		10	-2.3026	0.4406	0.0072	12			
Company Value	Customer Referral Value	Brand promotion	8	-2.0794	0.3979	0.0066	20	7	1
		Recommending to	10	-2.3026	0.4406	0.0072	12		

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		friends							
		Enjoyment of introducing the brand to others	11	-2.3979	0.4589	0.0075	10		
	Customer Lifetime Value	Repeat brand purchase	14	-2.598	0.521	0.008	1	2	
		Reduced price sensitivity (brand matters more than price)	12	-2.498	0.469	0.0075	5		
	Influence Value	Social media discussions about the brand	14	-2.598	0.521	0.008	1	1	
		Enthusiasm for brand discussions	14	-2.598	0.521	0.008	1		
		Sharing others' experiences	13	-2.5649	0.4908	0.008	4		
	Customer Knowledge Value	Feedback	12	-2.498	0.469	0.0075	5	4	
		Performance improvement	12	-2.498	0.469	0.0075	5		
	Brand Value	Functional Value	Reduced advertising costs	11	-2.3979	0.4589	0.0075	10	
Increased revenue			8	-2.0794	0.3979	0.0066	20		
Increased sales			8	-2.0794	0.3979	0.0066	20		
Increased profitability			9	-2.1972	0.4205	0.0069	16		
Positive Brand Attitude		Favorable attitude	8	-2.0794	0.3979	0.0066	20	11	
		High brand attention	7	-1.9459	0.3724	0.0061	28		
		Brand prestige	12	-2.498	0.469	0.0075	5		
Brand Loyalty		Continued brand purchase	10	-2.3026	0.4406	0.0072	12	9	
		Revisiting the brand's website	9	-2.1972	0.4205	0.0069	16		
		Future purchases	8	-2.0794	0.3979	0.0066	20		
Brand Commitment & Trust		Commitment to purchasing from the brand	7	-1.9459	0.3724	0.0061	28	6	
		Trust in the brand	12	-2.498	0.469	0.0075	5		
		Commitment to promoting the brand	10	-2.3026	0.4406	0.0072	12		
		Enjoyable brand experience	12	-2.498	0.469	0.0075	5		

The findings derived from the meta-synthesis analysis regarding the outcomes of customer engagement are presented in Table 12.

Table 12. Meta-Synthesis Analysis Findings Based on Importance (Consequences of Customer Engagement)

Concepts by Importance	Main Factors by Importance
Value to the Company	Influence Value
	Customer Lifetime Value
	Customer Knowledge Value
	Customer Referral Value
Value to the Customer	Economic Value
	Cognitive Value
	Social Value
	Emotional Value
Value to the Brand	Brand Commitment & Trust
	Brand Loyalty
	Functional Value

In conclusion, Figure 1 presents the results derived from the meta-synthesis, incorporating the most significant concepts based on their rankings.

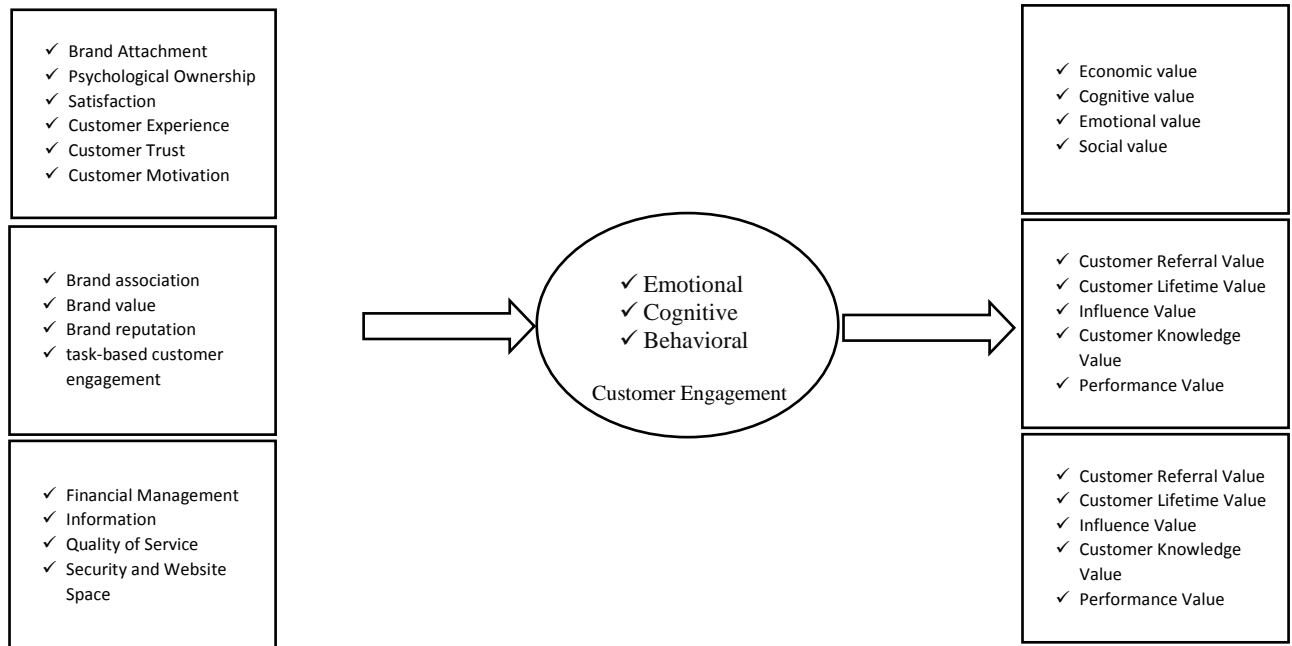


Figure 2. Determinant Factors Model of Customer Engagement in Online Shopping Websites

5. Discussion

Considering that customers are regarded as one of the main pillars of organizational sustainability and that online sales platforms have seen significant growth in recent years, implementing appropriate policies and strategies to retain customers in this digital environment and utilizing customer resources in line with corporate marketing strategies creates a competitive advantage for organizations. This study provides a conceptual framework for the prerequisites and outcomes of customer engagement on online shopping platforms. The proposed model outlines the prerequisites for customer engagement, aiming to identify the components and factors that shape customer engagement.

The literature review reveals that previous studies have not reached a consensus on the indicators and dimensions of these prerequisites, and each study has examined only a limited set of factors. Therefore, this research employs the meta-synthesis method to systematically examine and develop the prerequisites and outcomes of customer engagement in online shopping by analyzing 310 articles until theoretical saturation is

reached. This study identifies seven principal codes, 31 criteria, and 112 categories. The findings indicate that the key factors influencing customer engagement can be classified into three main categories: "website characteristics," "customer assets," and "company assets." Among these factors, components such as "website commitment," "product quality," "up-to-date information," and "product reliability" had the highest weight and significance.

Furthermore, the dimensions of customer engagement were divided into three categories: cognitive, emotional, and behavioral. In this context, behaviors such as "site following," "social media participation," and "product feedback" played the most significant roles. The outcomes of customer engagement also appeared at various levels: customer, company, and brand, with the most important being "impact value," "customer lifetime value," and "customer knowledge value."

According to the research findings, the prerequisites of customer engagement were classified into three main components: customer assets, brand assets, and

website/platform characteristics. The value dimensions of engagement were categorized into cognitive, emotional, and behavioral components.

These findings align with the results of previous studies and, in some cases, expand on them. For instance, the research by Sassanelli and Pacheco (2024) also demonstrated that the perceived quality of digital services plays a crucial role in customer loyalty. The current findings similarly indicate that the quality and reliability of digital products and services are effective predictors of both behavioral and emotional customer engagements. On the other hand, recent studies, such as the one by Alimamy & Gnoth (2022), have emphasized that personalized experiences in the digital context, facilitated by AI-based recommendation systems, can significantly increase customer satisfaction, enjoyment, and trust—an aspect also confirmed in the present research through variables like "satisfaction," "enjoyable shopping experience," and "information security."

One of the advantages of this research is the use of the meta-synthesis approach to extract a comprehensive conceptual model and integrate diverse qualitative findings, which has been less emphasized in previous literature. This approach allowed the study to gain a deeper understanding of customer engagement mechanisms, particularly in the context of Iranian online stores.

Additionally, the use of Shannon entropy to determine the significance of the concepts extracted from the qualitative findings enhanced the explanatory value of the research.

However, this research has several limitations. First, the primary focus was on qualitative studies, which may have led to the exclusion of some impactful quantitative data. Second, most of the data were extracted from studies conducted in developed countries, which may reduce the generalizability of the findings to other cultural and economic contexts. Third, despite the relative comprehensiveness of the proposed model, the rapid changes in digital technologies and consumer behavior over

time could affect the validity of the constructs in the model.

From a practical perspective, this research's findings can serve as a valuable guide for digital marketing managers, user experience designers, and customer loyalty strategists. Designing platforms focusing on information security, personalizing the experience, and providing quick responses can increase customer loyalty and reduce churn rates (Rane et al., 2023). Creating an interactive and participatory space in social networks and customer communities, primarily through user-generated content, can strengthen long-term and emotional interactions (Sykora et al., 2022).

6. Conclusion

The model presented in this research can theoretically serve as a foundational framework for future empirical tests. The proposed model, in addition to covering technological and psychological factors, also incorporates the role of relational and social variables in explaining customer engagement, which has often been overlooked in many previous models (Barari et al., 2021).

For future research, it is recommended that:

- Comparative studies across different countries and cultures will be conducted to examine the generalizability of the results.
- Longitudinal methods can be employed to assess the sustainability of customer engagement over various periods.
- We can explore the role of emerging technologies, such as the metaverse and augmented reality, in shaping and enhancing customer engagement.
- Qualitative and quantitative data integration using mixed-methods analysis can be conducted on a larger scale.
- Overall, this research, through a systematic and integrated approach, presents a theoretical and practical model that can provide a clear path for future research and improve the performance of digital businesses.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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