



Review

From Customer Intimacy to Digital Customer Intimacy

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Abstract: Customer intimacy plays a crucial role in shaping customer relationships and guiding organizational strategies. As the digital business environment has grown, the concept of customer intimacy has evolved, leading to significant changes in its dimensions and implications. This systematic literature review and synthesis comprehensively analyzes the current research on customer intimacy, reexamines it within the context of e-commerce and digital marketing, and introduces the concept of “Digital Customer Intimacy”. The paper explores the unique characteristics of digital customer intimacy, how it differs from traditional customer intimacy, and identifies areas for future research. By synthesizing insights from various studies, this review deepens our understanding of customer intimacy in both traditional and digital contexts, offering practical insights for modern marketing and laying the groundwork for future research.

Keywords: customer intimacy; digital customer intimacy; digital technologies

1. Introduction

In modern marketing research, customer intimacy has emerged as a crucial aspect of relationship marketing [1–4] and an essential business strategy [5]. It plays a vital role in shaping the quality and strength of relationships between customers and businesses [3,6,7]. Scholars have recognized customer intimacy as an antecedent to key business relationship factors, including customer loyalty, trust, and continuous purchase intentions. The concept encompasses multiple dimensions within business relationships, such as intimacy with the brand, frontline employees, products or services, and even among customers themselves. These dimensions collectively foster long-term, interactive business relationships that are fundamental to a business’s sustained success [8].

While there is no universally agreed definition of customer intimacy, it generally refers to the closeness achieved when businesses engage with customers and fulfill their demands. Central to this concept is the ability to offer personalized solutions tailored to individual customer preferences [9]. Beyond transactional interactions, customer intimacy also involves a psychological dimension, which includes emotional connections and a mutual understanding between the customer and the business.

The expansion of e-commerce and digital service tools has led to an evolution in customer intimacy. Conventional indicators of intimacy, such as face-to-face interactions, have become less frequent in digital business settings, where digital intimacy now compensates for the lack of physical presence [10]. As human–machine interactions (HMIs) gain prominence through AI-driven applications, such as virtual agents, chatbots, and immersive environments like livestream shopping and the Metaverse, the need to understand how digital tools shape customer experiences and foster customer relationships has become critical. For example, the human-like attributes of AI agents [11], interactions with service robots [12], and the impact of social media and livestream commerce are becoming increasingly central to the study of customer relationships. As personalized service becomes easier to deliver with these new technologies, the ability of customers to form emotional connections with technology is becoming a key focus for service providers, as high levels



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of customer intimacy lead to increased self-disclosure and deeper customer understanding, creating a positive feedback loop.

With industries shifting toward digital interactions, studying customer intimacy in the digital commercial environment is becoming increasingly important. Recent technological advancements have broadened the scope of intimate disclosure beyond human relationships to human and machine relationships [13], and the aim of customer intimacy is not only to enhance customer attitudes toward products, but also to drive the adoption of new technologies, thereby fostering more humanized digital experiences [14].

Recognizing this shift, this review introduces the concept of Digital Customer Intimacy (DCI), a novel dimension in relationship marketing tailored to the digital era. DCI involves businesses building close relationships with customers via digital technologies. Unlike traditional customer intimacy, which relies on in-person interactions, DCI leverages digital tools to deliver personalized experiences and tailored solutions in digital environments, overcoming the limits of physical contact.

As technologies in personalized customer service, social media marketing, and AI customer service have rapidly advanced, interest in studying customer intimacy has surged. Yet, systematic research on digital customer intimacy is lacking, leaving the concept ambiguously defined. Thus, this review addresses the need for a clear understanding of customer intimacy, particularly in the digital context, to establish a solid foundation for future research.

To address these emerging dynamics, this systematic literature review explores the following research questions:

RQ1. What is customer intimacy and what is the current research landscape?

RQ2. What constitutes digital customer intimacy, and how does it differ from traditional customer intimacy?

RQ3. How have customer intimacy and digital customer intimacy developed, and what is the future?

In prior studies, customer intimacy has been investigated through various theoretical lenses. Treacy's [5] three value discipline model, for example, explored customer intimacy as a corporate strategy, where organizations adapt products and services to fit customers' needs, prioritizing the lifetime value of the relationship [5,15–17]. Additionally, theories like social exchange theory and relational marketing have examined the links between consumer trust, intimacy, and loyalty, positioning customer intimacy as a critical mediating factor in customer relationships [18]. Other theories, such as brand love theory, the triangular theory of love, and parasocial relationship theory, have been applied to explore the psychological dimensions of customer intimacy, suggesting that intimacy is essential in cultivating brand love.

In digital contexts, customer intimacy has been increasingly studied in relation to technology adoption [19]. Models such as the Information Systems Success Model, Technology Acceptance Model, and Theory of Planned Behavior have been used to investigate the connection between customer intimacy and technology adoption.

Utilizing a systematic methodology, this review explores the concepts and theories of customer intimacy and digital customer intimacy, offering deep insights and implications for both current and future marketing practices. This review positions digital customer intimacy as a critical extension of relationship marketing theory. As the first of its kind, this review introduces digital customer intimacy as a distinct construct, offering a basis for future research on the psychological and behavioral dynamics of digital customer relationships. This contribution bridges gaps in existing theories, aligning relationship marketing with the demands of a technology-driven marketplace. This study also provides insights into leveraging digital tools to build customer intimacy. By understanding DCI, businesses can design personalized and engaging digital experiences that enhance loyalty and satisfaction, which is particularly valuable for companies seeking digital transformations.

2. Methodology

This systematic literature review adopts a replicable, scientific, and transparent process to synthesize existing knowledge and identify gaps within the fields of customer intimacy and digital customer intimacy. The methodology is based on established guidelines for conducting systematic reviews, specifically outlined [20,21]. These frameworks ensure rigor and reliability in the research process, as illustrated in Figure 1.

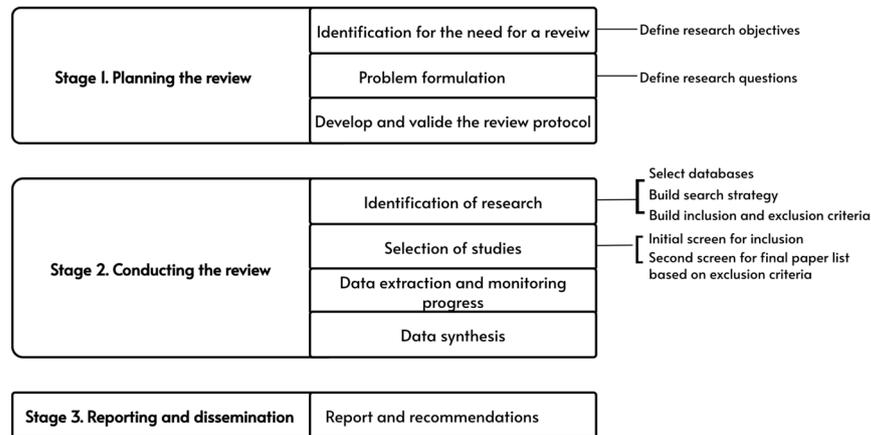


Figure 1. Research process. Adopted and developed from [20,21].

2.1. Stage 1 Planning the Review

The review process began with identifying the need to address the underexplored areas of customer intimacy (CI) and digital customer intimacy (DCI), particularly given the growing relevance of digital transformation in relationship marketing. A set of clearly defined research objectives and corresponding questions was established, as follows:

RQ1. What is customer intimacy and what is the current research landscape?

This research question aims to evaluate the current state of CI research by exploring its conceptualization, dimensions, and associated constructs.

RQ2. What constitutes digital customer intimacy, and how does it differ from traditional customer intimacy?

This research question aims to define and operationalize DCI while highlighting its unique features and measurements.

RQ3. How have customer intimacy and digital customer intimacy developed, and what is the future?

This research question aims to investigate the development of CI and DCI with the industry transition and identify future research directions.

These research questions were further broken down into sub-questions to ensure a comprehensive analysis, as summarized in Table 1.

Table 1. Research questions and sub-questions.

RQ1. What is customer intimacy (CI) and what is the current research landscape?	SQ1-1	What are the definitions of CI in contemporary research?
	SQ1-2	What are the recognized dimensions of CI?
	SQ1-3	What constructs and models are commonly utilized to demonstrate the impact of CI across different contexts?
RQ2. What constitutes digital customer intimacy (DCI), and how does it differ from traditional customer intimacy?	SQ2-1	What is the definition of DCI?
	SQ2-2	What methodologies and measurements can be employed to study DCI?
	SQ2-3	What is the difference between DCI and CI?
RQ3. How have customer intimacy and digital customer intimacy developed, and what is the future?	SQ3-1	How have CI and DCI developed?
	SQ3-2	What is the future for CI and DCI, and what directions should future research pursue?

Additionally, a review protocol was developed to ensure methodological consistency and quality. This protocol included inclusion and exclusion criteria, a structured search strategy, and a clear plan for data extraction and analysis.

2.2. Stage 2 Conducting the Review

2.2.1. Literature Search Strategy

The literature search was conducted on 29 October 2024, using Scopus and the Web of Science, both recognized for their comprehensive coverage of high-quality, peer-reviewed academic content [22,23]. To ensure the quality of the reviewed literature, only journal and conference proceeding papers were included, as this review aimed to gather robust evidence from original, peer-reviewed research that offers a solid theoretical foundation for new concepts [24].

The initial search employed the following keywords: “consumer intimacy”, “customer intimacy”, and “user intimacy”. To maintain the research focus within the commercial context, a set of inclusion criteria was applied, as detailed in Table 2.

Table 2. Inclusion criteria.

IC1	Title, abstract, OR keywords include: “Consumer intimacy” OR “Customer intimacy” OR “User intimacy”
IC2	Article language: English
IC3	Article published year: from 2000
IC4	Source type include Journal or Conference proceeding paper
IC5	Publication stage: Final
IC6	Include subject area: Business, Management and Accounting; Computer Science; Decision Sciences; Economics, Econometrics and Finance; Multidisciplinary; Social Sciences; Undefined Exclude keywords: Addiction; Adolescent; Adult; Condom; Dating Apps; Drug Abuse; Drug Dependence; Drug Use; Embodiment; HIV Infections; Human
IC7	Immunodeficiency Virus Infection; Sex Difference; Sexual Behavior; Sexual Health; Sexual Partners; Sexuality; Substance Abuse, Intravenous; Substance-Related Disorders; Touch; Young Adult; Online Dating; Dating App

A sample search query for Scopus is provided in Table 3.

Table 3. Sample search query.

<p>((TITLE-ABS-KEY (user AND intimacy) OR TITLE-ABS-KEY (consumer AND intimacy) OR TITLE-ABS-KEY (customer AND intimacy)) AND (LIMIT-TO (SUBJAREA, “COMP”) OR LIMIT-TO (SUBJAREA, “SOCI”) OR LIMIT-TO (SUBJAREA, “BUSI”) OR LIMIT-TO (SUBJAREA, “ECON”) OR LIMIT-TO (SUBJAREA, “DECI”) OR LIMIT-TO (SUBJAREA, “MULT”) OR LIMIT-TO (SUBJAREA, “Undefined”)) AND (EXCLUDE (EXACTKEYWORD, “Adolescent”) OR EXCLUDE (EXACTKEYWORD, “Adult”) OR EXCLUDE (EXACTKEYWORD, “Augmented Reality”) OR EXCLUDE (EXACTKEYWORD, “Dating Apps”) OR EXCLUDE (EXACTKEYWORD, “Dating App”) OR EXCLUDE (EXACTKEYWORD, “Embodiment”) OR EXCLUDE (EXACTKEYWORD, “HIV Infections”) OR EXCLUDE (EXACTKEYWORD, “Haptic Interfaces”) OR EXCLUDE (EXACTKEYWORD, “Haptics”) OR EXCLUDE (EXACTKEYWORD, “Friendship”) OR EXCLUDE (EXACTKEYWORD, “Friend”) OR EXCLUDE (EXACTKEYWORD, “Human Immunodeficiency Virus Infection”) OR EXCLUDE (EXACTKEYWORD, “Major Clinical Study”) OR EXCLUDE (EXACTKEYWORD, “On-line Social Networks”) OR EXCLUDE (EXACTKEYWORD, “Online Social Network”) OR EXCLUDE (EXACTKEYWORD, “Online Social Networks”) OR EXCLUDE (EXACTKEYWORD, “Sexual Behavior”) OR EXCLUDE (EXACTKEYWORD, “Sexual Partners”) OR EXCLUDE (EXACTKEYWORD, “Sexuality”) OR EXCLUDE (EXACTKEYWORD, “Social Networks”) OR EXCLUDE (EXACTKEYWORD, “Social Networking Sites”) OR EXCLUDE (EXACTKEYWORD, “Social Networking(online)”) OR EXCLUDE (EXACTKEYWORD, “Social Networking”) OR EXCLUDE (EXACTKEYWORD, “Social Network”) OR EXCLUDE (EXACTKEYWORD, “Social Robots”) OR EXCLUDE (EXACTKEYWORD, “Tinder”) OR EXCLUDE (EXACTKEYWORD, “Touch”) OR EXCLUDE (EXACTKEYWORD, “Young Adult”) OR EXCLUDE (EXACTKEYWORD, “Human Engineering”) OR EXCLUDE (EXACTKEYWORD, “Companion Robot”) OR EXCLUDE (EXACTKEYWORD, “Adolescence”)) AND (LIMIT-TO (DOCTYPE, “ar”) OR LIMIT-TO (DOCTYPE, “cp”)) AND (LIMIT-TO (LANGUAGE, “English”)) AND (LIMIT-TO (SRCTYPE, “j”) OR LIMIT-TO (SRCTYPE, “p”)) AND (LIMIT-TO (PUBSTAGE, “final”)))</p>
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2.2.2. Screening Process

The search initially retrieved 335 articles, which were screened through the following stages:

- Title and Abstract Screening: Duplicates were excluded, resulting in 273 articles.
- Full-Text Review: Further exclusions were made based on the criteria outlined in Table 4, leaving 147 articles that directly addressed CI in a commercial context.

Table 4. Exclusion criteria.

EC1	Papers that do not include or do not discuss customer intimacy
EC2	Full text is not available, and the abstract does not provide enough information
EC3	Papers are not original research articles
EC4	Papers include intimacy but not in a commercial context
EC5	Papers discuss customer intimacy not between business parties
EC6	Papers that contain excessive recycled content by the same authors
EC7	Papers discuss customer intimacy in three value discipline

Recognizing the rapid evolution of digital interaction studies, an expanded search was conducted on 5 April 2024, incorporating the keyword “digital intimacy”. This supplementary search retrieved 102 papers from the Web of Science and 843 from Scopus. While many of these papers discussed intimacy in social or non-commercial contexts, few focused on digital customer intimacy. After manual screening, 10 relevant papers were added, resulting in a final sample of 157 studies. The entire filtering process is visualized in Figure 2.

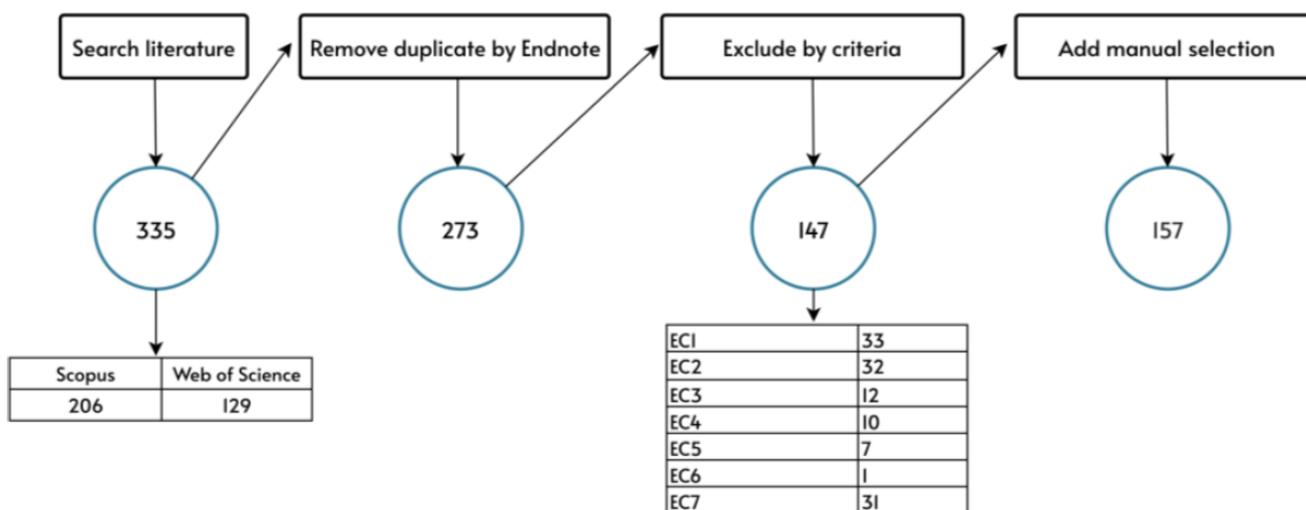


Figure 2. Literature filtering process.

2.3. Stage 3: Data Extraction and Analysis

Guided by the research questions, relevant data were extracted into an Excel spreadsheet [25]. Two complementary analytical approaches were employed to examine the data. Thematic analysis facilitated the identification and organization of core themes relevant to customer intimacy (CI) and digital customer intimacy (DCI), systematically exploring recurring patterns and constructs to address the research questions [26]. Meanwhile, qualitative content analysis provided a deeper exploration, uncovering new insights and theoretical connections. This approach was particularly valuable for analyzing the evolution of CI and the emergence of DCI, enriching our understanding of these constructs and highlighting their implications for future research.

The methodology was designed to ensure transparency, rigor, and reproducibility. By combining thematic and qualitative content analyses, this review offers both breadth and depth, addressing existing gaps while providing actionable insights for academics and practitioners.

3. Results and Analysis

This section presents a synthesis of the data extracted from the literature. By synthesizing and structuring the results, an in-depth understanding of customer intimacy and digital customer intimacy was achieved, offering insights for future research.

3.1. RQ1. What Is Customer Intimacy and What Is the Current Research Landscape?

Since Treacy [5] initiated the term “intimacy” related to customers [27], research on customer intimacy has been approached from various perspectives. Studies have explored customer intimacy as both a crucial construct in relationship marketing [28,29] and a fundamental business strategy [30]. In relationship marketing, customer intimacy is considered as a construct of customer relationship quality [31–33] and a measurement of customer relationship strength [7], as well as an antecedent [34] and a construct of brand love [35]. In business strategy, it is regarded as one of the three value disciplines for achieving a company’s competitive advantage [5,15,16].

Moreover, customer intimacy has been identified in different dimensions. In the literature, it has been explored between customers and brands [35], customers and companies [36], customers and their peer customers [37], and customers and products [38]. The multifaceted nature of customer intimacy has resulted in differing definitions across studies, posing a challenge for in-depth research.

3.1.1. SQ1-1: What Are the Definitions of Customer Intimacy in Contemporary Research?

The definitions of customer intimacy vary among scholars across different research contexts. Table A1 in Appendix A presents a summary of these definitions.

In the reviewed literature, customer intimacy is primarily seen as a customer relational concept, emphasizing the reciprocal relationship between companies and customers [39]. It involves ongoing engagement [8,40] and continuous interaction [41] between parties for building a feeling of closeness [42], emotional connection [35,43], and mutual understanding [44]. This relationship enables customers to share their preferences [45] and issues [46,47], while also allowing companies to understand individual customer needs and actively respond to them [48]. This responsiveness includes tailoring products and services [49,50] or offering personalized solutions [45].

Drawing from the literature, authors summarize customer intimacy as an ongoing business relationship characterized by a sense of closeness and mutual understanding between the company and the customer. This relationship is built through continuous interaction, active engagement, and responsiveness to customer feedback, with the ultimate goal of fostering mutual benefit.

3.1.2. SQ1-2: What Are the Recognized Dimensions of Customer Intimacy?

In this study, customer intimacy is explored across various dimensions throughout the business transaction process. Despite extensive study in diverse contexts, there remains a lack of clear summarization regarding its application in customer relationship research, often resulting in its indiscriminate use without proper consolidation. Therefore, a synthesis of customer intimacy dimensions was created and is presented in Figure 3.

At a macro level, customers develop intimacy with a brand by forming emotional connections [33], which are closely tied to the brand’s image and reputation [51]. On a more individual level, customers build intimacy with a company creating personalized experiences and ongoing satisfaction [52]. This intimacy extends across multiple touchpoints, including interactions with staff [53], which often enhance by personal relationships and exceptional service [54].

Furthermore, customers foster intimate relationships with their peer customers [55], engaging in information sharing [4] and building a sense of community [56]. Intimacy between customers strengthens their continuous intentions to purchase products or service [37].

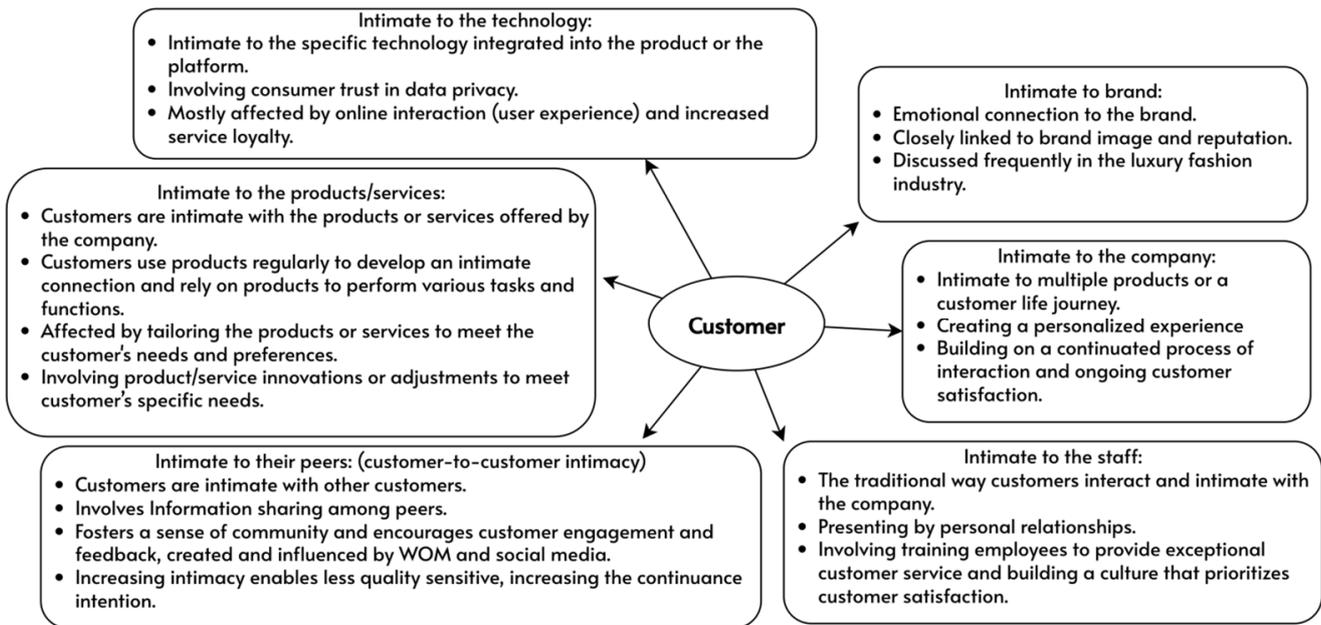


Figure 3. Dimensions of customer intimacy.

Customers also develop intimacy with products or services [38], relying on them for various tasks and valuing tailored solutions that meet their specific needs [57]. Additionally, at a micro scale, customers establish intimate connections with the technology integrated into products or services [58,59], aligning with their preferences and fostering trust in data sharing [60].

3.1.3. SQ1-3: What Constructs and Models Are Commonly Utilized to Demonstrate the Impact of Customer Intimacy Across Different Contexts?

The literature reveals a complex relationship between several factors associated with customer intimacy. These factors are categorized as antecedents, mediators, outcomes, and moderators, each playing a role in shaping the construct of customer intimacy.

Being a two-way relationship, customer intimacy is influenced by factors from both customer and company perspectives. Customer factors, such as customer usage patterns [61], knowledge about the company [62], and the perceived value of products or services [35], contribute to customer feelings about the company. Similarly, company factors, such as marketing strategies [63], social media marketing [2], customer relationship management strategies [64], brand features [65], staff interactions [66], and product features [67], impact the intimacy from company toward its customers.

Studies have examined the mediation mechanisms linking the antecedents of customer intimacy to its outcomes, such as consumer engagement [68], brand presence [69], trust [6], passion [70], and intention of use [71]. Moreover, scholars have studied how these relationships are moderated by factors like word-of-mouth [35], relationship norms [71], and religious factors [72].

Many studies have researched how customer intimacy contributes to company success, specifically to a company's performance [45] and innovation in business models [73], products [74], or services [75]. These successes are impacted by the accumulation of tangible or intangible assets such as customer information disclosure [76], brand gratitude [56], brand love [77], brand image [68], and customer loyalty [4].

With the growth of e-commerce [78] and digital marketing [79], a significant focus in the literature has been on enhancing customer intimacy through social media platforms. This includes increased consumer engagement with official social media accounts [68] and examining shifts in media consumption patterns [63].

The constructs and models identified in the literature were synthesized into an integrative conceptual framework, as illustrated in Appendix A Figure A1. This framework provides a foundation for future research, helping to further understand the dynamics of customer intimacy and the interacting concepts.

3.2. RQ2. What Constitutes Digital Customer Intimacy, and How Does It Differ from Traditional Customer Intimacy?

Digital technologies have transformed customer interactions and service delivery [80], prompting a shift in service models and marketing strategies [81,82]. Although digital technologies may increase the physical distance between customers and businesses, it also reduces the psychological distance [83], highlighting the importance of exploring customer intimacy in the e-commerce context. Digital intimacy is a subdimension of user attitudes toward machines [84]. Intimacy emphasizes cultivating close and anthropomorphic connections to enhance users' confidence in chatbot technology [85].

However, the field remains under-researched, resulting in the lack of a universally accepted term for customer intimacy in the digital era. To bridge this gap, the term "digital customer intimacy" is proposed for further exploration. "Digital", as defined by Merriam-Webster [86], refers to the utilization of devices constructed or operating based on electronic principles. Distinct from "cyber", "online", or "virtual", "digital" encompasses broader aspects of commercial services, including but not limited to online banking, e-learning, online shopping, and virtual agent services [87].

This section provides a thorough review of the role of digital customer intimacy (DCI) in the literature, examines the research methods employed in this area, and distinguishes DCI from customer intimacy (CI).

3.2.1. SQ2-1: What Is the Definition of Digital Customer Intimacy?

Since there is no established definition of DCI in the current research, the authors summarize and synthesize the existing definitions of customer intimacy in a digital context and digital intimacy in the commercial context. Based on this synthesis, DCI is operationalized accordingly. The summary is presented in Table A2 in Appendix A.

Digital intimacy is defined as a platform's user-perceived ability to evoke warmth, closeness, or belonging, which encompasses modes of intimacy with their interaction partners [88]. The construct of digital intimacy includes elements such as honesty, genuineness, positivity, and mutual understanding [87].

In terms of customer intimacy in the digital context, Lin et al. [89] stated that customer intimacy on a mobile app means a direct relationship, collaborative data exchange, and a better user experience, rather than just measuring the exchange relationship. Read, Robertson, McQuilken, and Ferdous [68] highlighted that customer intimacy involves increasingly rich and crucial information sharing in digital commerce, which has advanced marketing research into an era where technology mediates customer communication and relationships [90].

Building on previous definitions of customer intimacy, digital customer intimacy specifically involves technology-driven interactions [91], user experience enhancement [89], customer data utilization [92], and online consumer engagement [64] to foster close relationships between customers and businesses. It enables the provision of bespoke products [73] and services tailored [93] to individual preferences and the optimization of the use of customer data to enhance overall experiences [93].

Drawing upon insights from previous researchers, we formulated the operational definition of digital customer intimacy as follows: digital customer intimacy as a close, data-driven relationship facilitated by digital technologies, which encompasses leveraging data exchange, understanding individual needs, driving engagement, enhancing user experiences, and fostering emotional connections to deliver personalized solutions.

3.2.2. SQ2-2: What Methodologies and Measurements Can Be Employed to Study Digital Customer Intimacy?

Given the limited research on DCI, there are no established methodologies and measurements in this field. However, by examining similarities with CI and DCI, this research question is addressed by summarizing the research methods used for studying customer intimacy in digital contexts. These methodologies are detailed in Table A3 in Appendix A.

Previous researchers have employed questionnaires, online surveys, interviews, and experimental setups gathering both qualitative and quantitative data. These approaches are often grounded in the theories of Social Exchange Theory, the Information Systems Success Model, and the Technology Acceptance Model. The popular data analysis techniques adopted are Structural Equation Modeling, Confirmatory Factor Analysis, and Multivariate Analysis of Variance.

Regarding the measurement of CI in the digital context, studies typically focus on users' experiences, ease of use, users' perceptions, and emotional connections, examining factors like user engagement, trust, and emotional closeness. For example, in mobile shopping, researchers assessed metrics including ease of communication and convenience, highlighting users' experiences in this scenario [94]. Additionally, users' perceived emotional closeness and support with a running app were measured [71].

Furthermore, many studies treat CI as a sub-dimension within their unit of analysis. For instance, Kim, Li, and Kim [94] studied mobile shopping usage, incorporating intimacy as a variable related to usability in this context. This review addresses the unit of observation to better understand the research perspectives. It finds that the majority of studies focus on the customer as the primary unit of observation, indicating that most CI research is conducted from the customer's perspective.

Table 5 summarizes and synthesizes a set of measurements for DCI from the customer perspective. To gain a more comprehensive understanding of DCI as a mutual relationship construct, future research should consider exploring DCI from the company's perspective.

Table 5. Proposed measurements of DCI.

Perceived Quality and User Experience	Willingness of Data Sharing	Perceived Understanding	Perceived Emotional Connection	Perceived Trust
I feel XXX is useful I feel XXX is easy to use I have the help of XXX in moments of need I feel XXX is good in quality I have a good experience using XXX I feel happy if I continue using XXX	I would like to disclose my information to XXX I would like to share my preference with XXX	I feel XXX understands me I feel XXX really listen to what I have to say I feel XXX knows my preference I feel XXX knows my needs for service and information I feel XXX can analyze and understand my demands	I feel XXX is warm I feel XXX cares about me I receive considerable emotional support from XXX I feel close (and/or emotionally close) to XXX There is something special about my relationship with XXX	I feel the use of XXX is secure I feel XXX is trustworthy I feel XXX has high integrity

3.2.3. SQ2-3: What Is the Difference Between Customer Intimacy and Digital Customer Intimacy?

The distinctions between CI and DCI reveal both shared characteristics and unique features, as shown in Figure 4.

Key differences are observed in interaction channels and the extent of customer information exchange. DCI has emerged from digital business environments characterized by frequent HMIs, emphasizing direct relationships between customers and products or services. DCI relies heavily on technology interfaces like mobile apps and online platforms to facilitate direct and frequent interactions, allowing for instant data exchange and problem resolution. While DCI enables personalized service delivery, it may face challenges in fostering deep emotional connections due to the lack of face-to-face interactions.

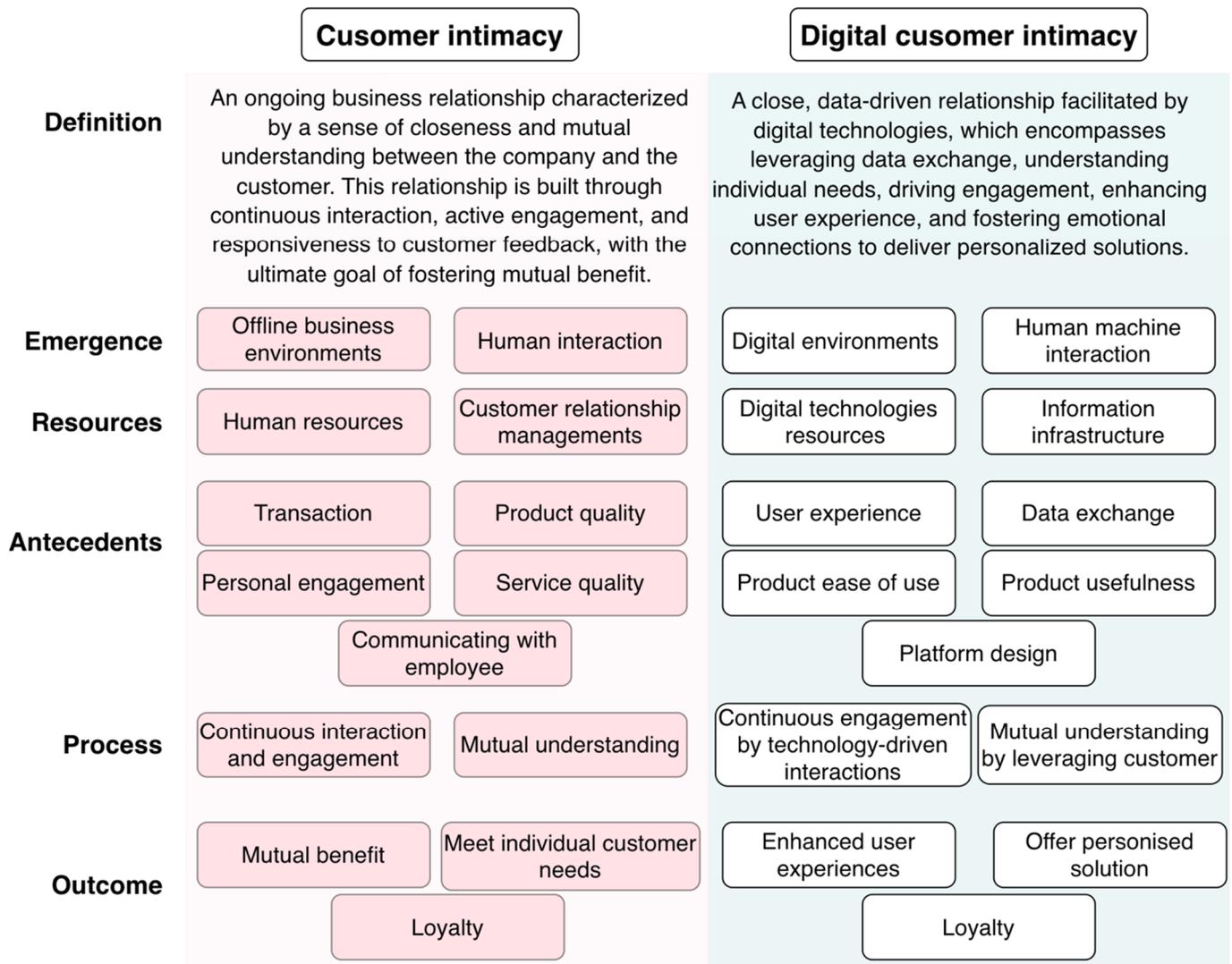


Figure 4. Difference between CI and DCI.

In contrast, CI emphasizes close personal relationships, typically through traditional offline channels that may involve slower response times and less frequent interactions. This personal relationship approach provides more opportunities to connect with customers on a human level, fostering trust and loyalty over time. In CI, people are the pivotal asset, driving both customer satisfaction and commitment to quality [27]. Particularly in service-based industries, human resources play a vital role in ensuring effective service delivery for fostering customer intimacy [95].

Moreover, DCI utilizes advanced digital technologies to create personalized experiences by analyzing past behaviors and preferences. This approach improves the overall customer experience and fosters loyalty and trust. In contrast, CI relies on interpersonal relationships and human intuition to tailor services, which can lead less consistent personalization compared to digital methods. Overall, DCI contributes to personalized experiences and addresses customer demands through technology-enabled interactions and collaborative data exchange, adapting to the evolving nature of customer relationships in the digital era. In practice, CI and DCI complement each other, working together to enhance customer service quality and deliver personalized solutions.

3.3. RQ3. How Have Customer Intimacy and Digital Customer Intimacy Developed, and What Is the Future?

3.3.1. SQ3-1: How Have CI and DCI Developed?

The development of CI and DCI are closely linked to the evolution of manufacturing and service paradigms, from mass production and standardized services [96] to mass customization and personalization. Table 6 summarizes this development.

Table 6. The development of CI and DCI.

Dimension	Feature	Mass Production	Mass Customization	Personalization
Customer	Customer Interaction	Minimal	Some	High, Data-Driven Interaction
	Customer Intimacy	None	Limited	High, Digital Customer Intimacy
	Customer Data	Not Used	Minimal, Used for Customer Segmentation	Extensively Used for Personalized recommendations
Product/Service	Level of Customization	None	Predefined Options	Individualized
	Variety	Low	Moderate	High
	Product/Service Design	Standardized Product Design	Modular Design of Customizable Options	Data-Driven Design Tailored for Individual Customers
	Unit Cost	Low	Moderate	Moderate to High
Production	Production Volume	Very High	High	Low to Moderate
	Information Technology	ERP, Basic IT	ERP, CRM, Web 2.0, Basic IT	CRM, Digital Technologies [Incl. AI/ML, Big Data Analytics], Web 2.0/3.0
	Manufacturing Technology	Production Lines, Assembly Lines, Automation	CAD/CAM/CIM, Robotics, FMS, Automation, Simulation Modelling	CAD/CAM/CIM, Robotics, FMS, Automation, IoT, Simulation Modelling, Industry 4.0, Digital Technologies [Incl. AI/ML, Big Data Analytics]
	Cost Efficiency	Very High	Moderate to High	Low to Moderate

In mass production, there is typically a low product variety and almost no customer intimacy. This approach focuses on producing large quantities of standardized products at a low cost [97]. The products are identical, offering no customization to individual customer preferences, and there is minimal direct interaction or relationship-building with individual customers. However, evolving customer expectations led to the emergence of product customization and the concept of customer relationships.

Mass customization seeks to merge the efficiency of mass production with the flexibility of customized products [98]. This paradigm allows for an increased product variety while maintaining cost-effectiveness, enabling customers to choose from a range of options to tailor products to their preferences. Technologies such as industrial robots, flexible manufacturing systems, and the modular design of products have made it possible to offer customization without significant cost increases. In this paradigm, some customer interactions result in limited customer intimacy.

As customer needs continuously evolve, personalization has emerged as an innovative business model [27]. Unlike mass customization, which involves predefined product variants initiated by the customer [99], personalization refers to system- or company-initiated [100] solutions that tailor offerings to individual customer needs and preferences [95,101].

In personalization, the variety of products and services is vast. Customer intimacy is crucial, as a closer customer relationship allows for more personalized solutions, thereby enhancing the potential to serve the customer throughout their lifetime [42]. Personalization

caters to various niche markets, requiring supply chain flexibility [102] and often leading to higher unit costs.

Digital technologies facilitate personalized services by leveraging user behaviors and customer data [100]. For example, intimate contactless technology services provide personalized experiences tailored to individual preferences and needs [103]. With the aid of big data analytics and advanced AI technologies, companies can easily gain insights into customer preferences and needs [14], identifying [101] and quantifying [104] customer needs. DCI emerged from these data-driven customer interactions, enabling tailored customer solutions at scale, while offering an unlimited product variety.

The journey from mass production and standardized services to mass customization and personalization reflects the increasing importance of customer intimacy in business strategies. As digital technologies continue to advance, they further enhance the ability of businesses to offer personalized solutions, making digital customer intimacy an essential component of modern customer relationship management. Figure 5 illustrates this development.

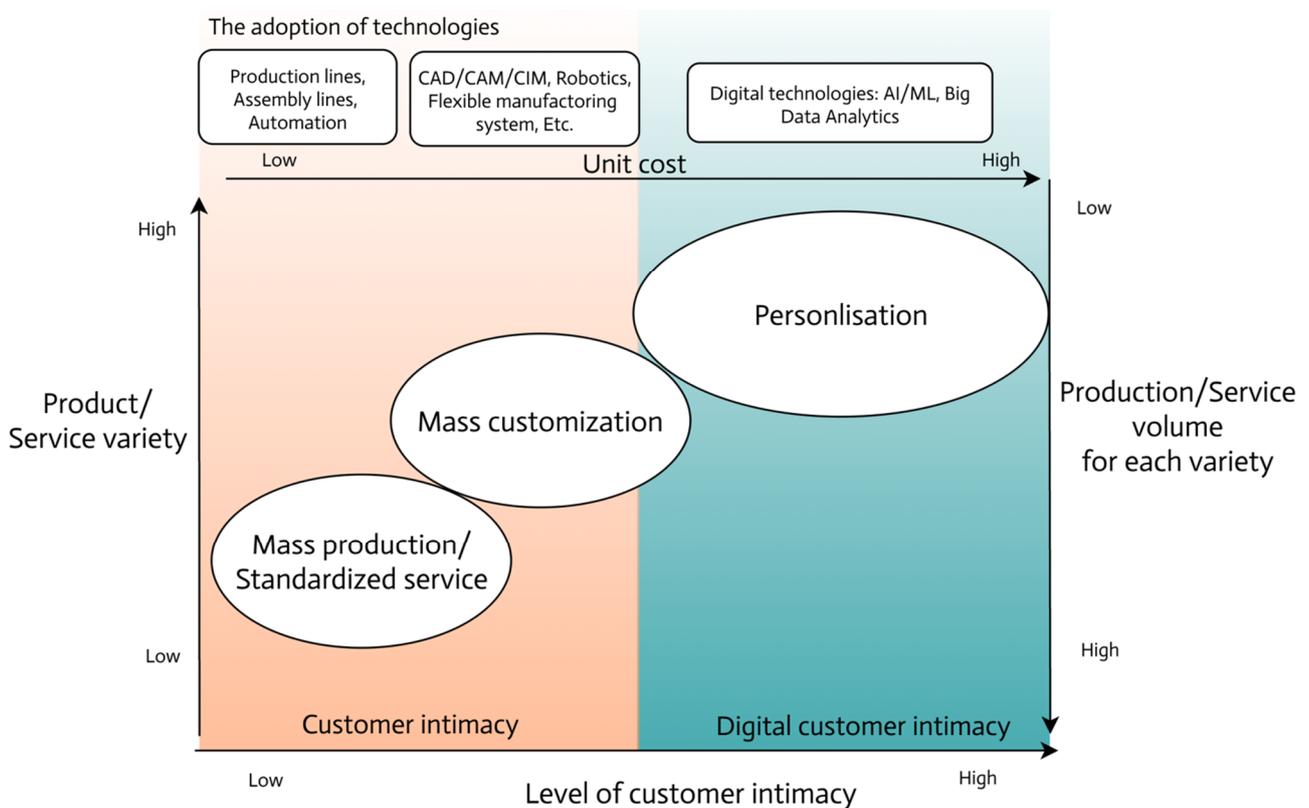


Figure 5. The development of CI and DCI.

3.3.2. SQ3-2: What Is the Future for Customer Intimacy and Digital Customer Intimacy and What Directions Should Future Research Pursue?

CI and DCI will become increasingly important as customer demands grow more refined and industries offer more personalized services. Their convergence will be essential for businesses to gain deep insights into customer needs and behaviors through both traditional and digital communication channels [64]. Consequently, a promising research area involves integrating CI and DCI methods to develop comprehensive digital strategies to understand customer requirements across various sectors.

As small- and medium-sized enterprises (SMEs) increasingly adopt Artificial Intelligence, the demand for personalized services is rising. However, SMEs encounter specific challenges when implementing DCI strategies. Researchers may explore the adaptability and effectiveness of DCI applications in SMEs, focusing on scalable and cost-effective solutions.

Addressing psychological engagement in DCI is crucial, especially given that HMIs can increase the spatial distance between customers and businesses. Innovative solutions that focus on building trust and psychological connections are essential. One promising tool in this area is the Metaverse. Exploring the adoption of the Metaverse in the customer purchasing process to enhance DCI is a key area for further research. Additionally, integrating DCI within the Metaverse economy presents a promising research direction. As the Metaverse emerges as a new frontier for strategic business opportunities [103], understanding customer experiences and behaviors in virtual immersive shopping environments becomes vital. Research should investigate the applications, methods, and impact of DCI across various industries within the Metaverse ecosystem.

4. Discussion

As a niche area within relationship marketing, research focused solely on customer intimacy (CI) remains limited. Previous studies have often treated CI as a component of broader relationship marketing strategies, primarily addressing it in specific contexts or through fragmented theoretical lenses related to trust, loyalty, and customer relationships. With the business environment increasingly shifting toward digital contexts, research on CI has not fully addressed its evolving dynamics in the digital era.

The transition to a digital marketplace reflects changing customer demands, moving from standardized offerings to personalized experiences. Even businesses prioritizing operational excellence or product leadership must now consider customers' unique needs to retain loyalty and maximize their lifetime value. The ability to establish emotional connections and foster intimacy across various dimensions is becoming increasingly critical for enhancing customer retention. Both market demands and academic inquiry call for a deeper exploration of CI, particularly its application and development in digital environments.

This review defines CI as a business relationship characterized by a sense of closeness and mutual understanding, achieved through continuous interaction, active engagement, and responsiveness to customer feedback. The ultimate goal of CI is mutual benefits for both the business and the customer. Digital Customer Intimacy (DCI), as a distinct construct, adapts these foundational principles to meet the demands of technology-driven customer relationships. While traditional CI relies on face-to-face interactions to build emotional bonds, DCI leverages digital tools—such as AI agents, chatbots, and digital interfaces—to create personalized, data-driven experiences. These tools foster emotional connections even in the absence of physical presence, marking a paradigm shift in relationship marketing.

The findings of this review position DCI as a critical extension of relationship marketing theory, addressing gaps in understanding how digital technologies transform customer relationships. Theoretical contributions include consolidating the definitions and frameworks for CI and DCI, offering a foundation for studying their psychological and behavioral dimensions. DCI presents a scalable, data-driven model that integrates traditional intimacy into the digital environment, enabling new avenues of research into emotional engagement, technology adoption, and the evolving role of human-machine interaction (HMI). This review also identifies opportunities for integrating CI and DCI into emerging domains, such as the Metaverse economy, extending relationship marketing theory into novel technological contexts.

For practitioners, this review emphasizes the need to adapt relationship marketing strategies to incorporate digital tools. By understanding DCI principles, businesses can design more personalized and engaging customer experiences, enhancing satisfaction and loyalty. This is particularly relevant for organizations undergoing digital transformation, where DCI strategies enable consistent, scalable engagement through AI-driven platforms. Moreover, adopting DCI offers opportunities for product and service innovation, enabling businesses to maintain competitiveness in a technology-driven marketplace. In sectors like e-commerce, social media, and AI-powered customer service, DCI provides actionable insights for developing emotionally resonant, data-driven customer relationships.

Despite its significance, DCI remains underexplored. Future research should focus on converging CI and DCI within dynamic business environments, addressing emotional engagement challenges in digital interactions, applying DCI in small- and medium-sized enterprises (SMEs), and integrating DCI strategies into the Metaverse economy. Such efforts will deepen our understanding of DCI's transformative potential for customer engagement in the digital age.

5. Conclusions and Limitations

This systematic literature review explores the evolving concepts of customer intimacy (CI) and digital customer intimacy (DCI), addressing the following three core research questions: What is customer intimacy, and what is the current research landscape? What constitutes digital customer intimacy, and how does it differ from traditional customer intimacy? How have customer intimacy and digital customer intimacy developed, and what is the future?

The review defines CI and DCI, consolidates CI's dimensions, research models, and frameworks, and introduces DCI as a distinct construct. It highlights the key differences between CI and DCI, particularly in interaction methods, emotional connections, and measurement approaches, while discussing their development and future trajectories. This study positions DCI as a critical extension of traditional CI, emphasizing its role in leveraging digital tools to deliver scalable, personalized, and emotionally connected customer experiences.

Despite its contributions, this study has limitations. The limited research explicitly focusing on DCI and the predominance of customer perspectives in existing studies restrict a comprehensive understanding of the field. Future research should expand to include broader stakeholder perspectives, such as businesses and technology providers, to develop more holistic models. Additionally, the lack of longitudinal studies presents an opportunity to investigate how DCI evolves over time and its sustained impact on customer relationships. As the digital landscape continues to evolve, further research is needed to refine the conceptualization of DCI, assess its cross-industry applications, and explore its potential in emerging technologies such as the Metaverse. Advancing our understanding of DCI will help businesses to navigate the complexities of digital transformation, enabling them to build stronger and more meaningful customer relationships in an increasingly digital world.

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Appendix A

Table A1. Summary of definition of customer intimacy.

Authors	Concept	Research Context	Parties Involved	Definition	Components of Customer Intimacy	Antecedents of Customer Intimacy	Outcomes of Customer Intimacy	Theory Adopted
Alshreef, Hassan, Helal, Saleh, Tatiana, Alrefae, Elshawarbi, Al-Saify, Salem, and Elsayed [35]	Brand love intimacy	Hospitality enterprise	Customer and brand	“Brand love intimacy refers to people creating an emotional connection with a brand, similar to how they might interact with an individual”.	Emotional connection, interaction	Hedonic value and utilitarian value	Customer loyalty and advocacy	Brand love theory
Viitaharju and Lähdesmäki [47]	Customer intimacy	Finish food sector	Food producers and retailers	“Intimacy means that a business relationship is based on the identification of one’s business partner’s desires and needs”.	Business relationship, business desires, and needs	Personal contacts and communication	Trust	N/A
Cuganesan [105]	Customer intimacy	Investment	Customer and company	“‘Customer intimacy’ meant both knowing and delivering customer needs in the present and being able to anticipate these needs into the future through an understanding of customer interests”.	Knowing customer needs and respond to it	Understanding of customer interests	Customer satisfaction	Actor–network theory
Roy, Paul, Quazi, and Nguyen [49]	Customer intimacy	Banking	Customer and Bank	“Customer intimacy: keeping consumers’ best interests in mind and tailoring service offerings as per consumers’ needs”.	Customer best interest and tailoring service offering	N/A	Measuring consumers’ perceived service value	N/A
Jun, Tat, and Siqing [44]	Brand intimacy	Advertising	Customer and brand	“Brand intimacy describes the closeness and harmonization in a favorable consumer-brand relationship. It is usually indicated by consumers’ emotional willingness to keep in touch with the brand, to share feelings with the brand and to support the brand when it is in difficulty. In addition, brand intimacy mirrors consumers’ perceptions of the care, understanding and attention they receive from the brand. As such, it reflects the reciprocal emotional exchanges between consumers and their brands”.	Closeness and harmonization	Reciprocal emotional exchanges between consumers and their brands	Consumers’ emotional willingness to keep in touch, share feelings with the brand, and to support the brand when it is in difficulty	N/A
Yeung [106]	Customer intimacy	Manufacturing	Customer and suppliers	“I define customer intimacy as co-dependency between users as customers and producers as suppliers through their highly collaborative interfirm relationships in demand fulfillment, co-development of technologies, and strategic-organizational alignments that can be engendered through both spatial and relational proximity”.	Co-dependency	Highly collaborative interfirm relationships in	Demand fulfillment, co-development of technologies, and strategic-organizational alignments	N/A

Table A1. *Cont.*

Authors	Concept	Research Context	Parties Involved	Definition	Components of Customer Intimacy	Antecedents of Customer Intimacy	Outcomes of Customer Intimacy	Theory Adopted
Nouicer, Zaim, and Abdallah [45]	Customer intimacy	Management	Customer and company	“Customer intimacy is about meeting the needs and preferences of a customer; taking their opinions and complaints into account; and offering customized products that best meet their expectations”.	Meeting customer needs and preferences	Taking customer’s opinions and complaints into account	Satisfaction, customer loyalty, and customer retention	Relational marketing theory; CUSTOR scale model.
Graffigna and Gambetti [40]	Brand intimacy	Brand management	Customer and brand	“‘Intimacy’ is characterized by a more intimate relationship between consumer and brand; this is a phase of genuine engagement in which consumers feel committed to the brand and perceive it as an important component of their daily life”.	Intimate relationship	Genuine engagement	N/A	N/A
Cochran [36]	Customer intimacy	Management	Customer and company	“Customer intimacy is a relationship between a company and its customer, where the company collects information to better understand and serve the customer”.	Relationship	Collects customer information	Better understand and serve the customer	N/A
Yusfiarto, Nugraha, Pambudi, and Pambekti [72]	Customer intimacy	Employee management	Customer and company	“Customer intimacy emphasizes the closeness between the customers’ feelings and emotions and the company, the more intimate the relationship between consumer and company, the more effective its informational relation”.	Closeness between the customers’ feelings and emotions and the company	Employee behavior	More effective informational relation and customer loyalty	N/A
Yim, Tse, and Chan [54]	Customer intimacy	Restaurant and hair salon	Customer and company	“Customer intimacy, that is, to make customers feel good whenever they make contact with your company”.	Customers feel good	Service quality; customer satisfaction	Trust, loyalty intentions, and share of purchase intentions	N/A
Nora [62]	Customer intimacy	Banking	Customer and bank	“Customer intimacy is the ability of the bank to provide the best value for its products or services by making adjustments to products or services to meet customer’s specific needs”.	Company’s ability	Making adjustments to products or services	Meet customer’s specific needs	N/A
Barcelos et al. [107]	Brand intimacy	Social media	Customer and brand	“We define brand intimacy as the degree to which the brand interacts in a psychologically close way to its customers”.	Brand interacts to customers psychologically	Interaction	N/A	N/A
Akin and Doğan [31]	Brand intimacy	Brand management	Customer and brand	“Intimacy states the consumer’s feeling of sincere towards the brand and the level of the brand’s empathy with the consumer”.	Consumer’s feeling and brand’s empathy	N/A	N/A	N/A
Ponder, Bugg Holloway, and Hansen [41]	Customer intimacy	Service marketing	Service providers and customer	“We define customer intimacy in the services marketing context as an ongoing relational process wherein service providers interact with customers to develop and refine the service offering to meet individual customer needs”.	Ongoing relational process	Interact with customers	Develop and refine the service offering to meet individual customer needs	N/A

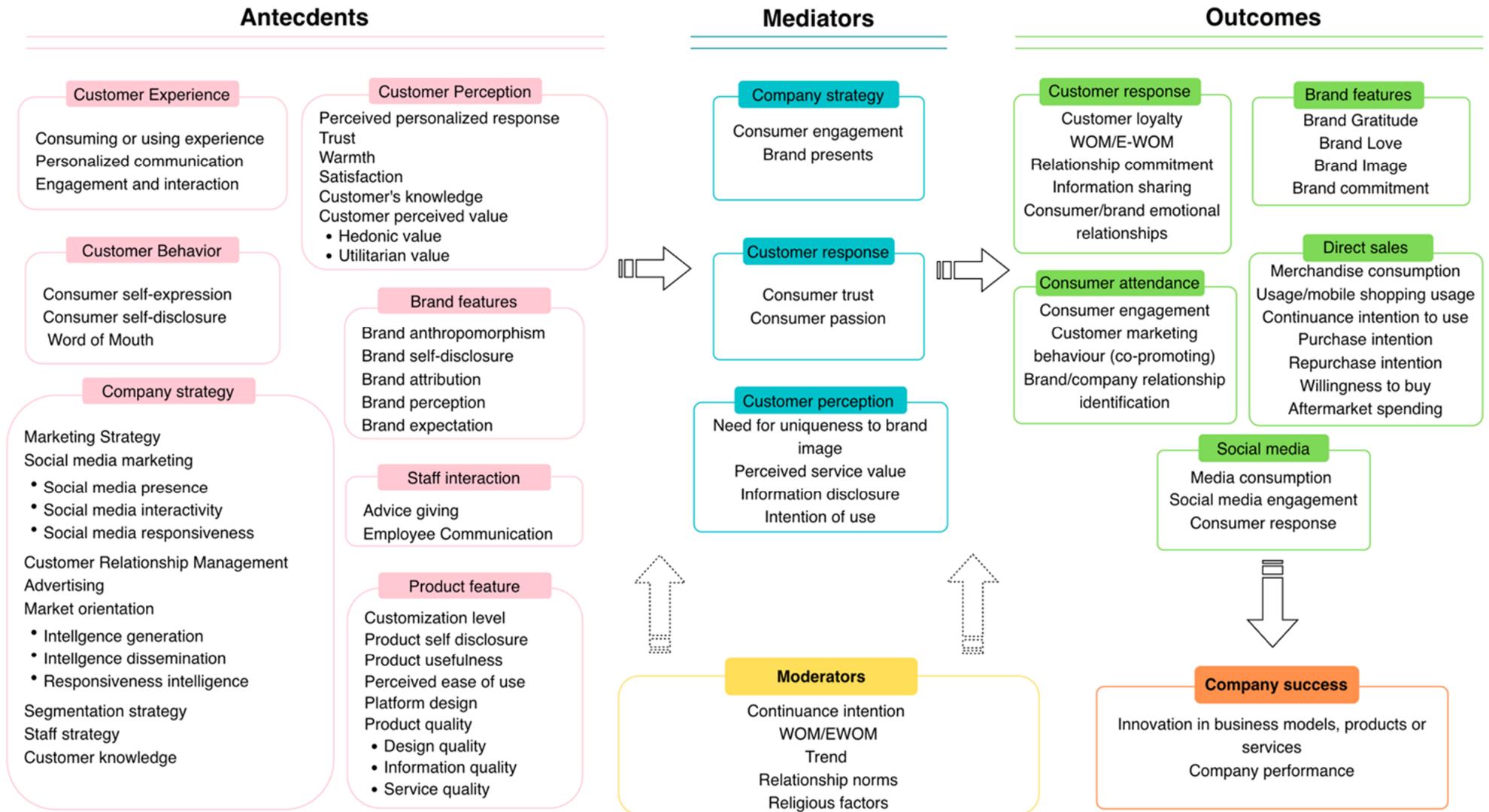


Figure A1. Integrative conceptual framework.

Table A2. Summary of definition of customer intimacy in digital context.

Authors	Concept	Research Context	Parties Involved	Definition	Components of Customer Intimacy	Antecedents of Customer Intimacy	Outcomes of Customer Intimacy	Theory Adopted
Cheng, Huang, and Lai [71]	Brand intimacy	Running Apps	Users and Brand	“Brand intimacy refers to the concept of having an intimate association with a consumer brand”.	Intimate association	Continuance intention, perceived usefulness, perceived ease of use, self-expression	Buy more products and services of that brand, have lower price sensitivity, pay more attention to brand information communication, and recommend and share the brand more often	Technology Acceptance Model
Lin, Liang, Huang, and Li [89]	User intimacy	Mobile App	User and Apps	“Intimacy, the feeling of closeness, includes five dimensions to highlight the importance of responding to users’ needs. These five dimensions are communication, caring, trust, comfort, and commitment; they bring about a better user experience, rather than just measuring exchange relationship”.	The feeling of closeness, communication, caring, trust, comfort, and commitment	User experience	Continues intention	Information Systems Success Model
Dong et al. [108]	Platform intimacy	Online Games	User and Platform	“Platform intimacy is an emotional variable that reflect the closeness between individuals and objects (platform). Intimacy refers to a sense of emotional closeness”.	Emotional closeness	Online interaction in terms of self-disclosure	User real-life behavior	Trust Transfer Theory
Cochran [36]	Customer intimacy	Web-based service	Customer and service	“Feelings of closeness and emotional bonding, involving intense liking, moral support, and the ability to tolerate flaws in the service”.	Feelings of closeness and emotional bonding	N/A	Continuance intention	N/A
Paiola, Khvatova, Schiavone, and Jabeen [73]	Customer intimacy	Business innovation	Customer and company	“Customer intimacy, meaning a direct relation and data exchange collaboration with customers, largely present with bespoke products”.	A direct relation and data exchange collaboration	Products	N/A	Theory of Business Model Innovation
Li [28]	Customer intimacy	Online marketing	Customer and service providers	“Intimacy, as a feeling of closeness, then influences consumers’ purchasing behavior”.	A feeling of closeness	Personalized service	Consumers’ purchasing behavior	N/A
Mulia, Usman, and Parwanto [39]	Customer intimacy	Mobile banking	Customer and company	“Customer intimacy is a two-way relationship between the company and the customer, which can minimize misunderstandings and foster a sense of understanding and belonging, so that the company and customers are able to make a positive contribution”.	A two-way relationship between the company and the customer	N/A	Positive contribution	N/A

Table A3. Measurements and methodologies of DCI research.

Authors	Concept	Context of Customer Intimacy	Measurement	Measurement Adopted from	Unit of Observation	Theory Used	Data Collection Method	Data Analysis Method
Kim, Li, and Kim [94]	Customer intimacy	Mobile shopping	<p>“I have experienced mobile shopping. I experience easy communication during mobile shopping. I feel an affinity toward mobile shopping. Mobile shopping is convenient”.</p>	Koefoed Hansen and Koziel [109,110], Spenner and Freeman [111]	Users	N/A	Questionnaire	Structural equation modeling
Lin, Liang, Huang, and Li [89]	User intimacy	Mobile app	<p>“Caring: I feel; The app knows my preference. The app knows my needs for service and information. The app cares and can satisfy my demands. The app concerns my demands. The app can analyze and understand my demands. Comfort: When I interact with the app, I feel relaxed. I feel peaceful. I feel comfortable. Trust: I feel the use of the app is secure. I feel the app provider can be trustworthy. I feel the app provider has high integrity. Commitment: I feel content if I have a chance to continue using the app. I feel happy if I have a chance to continue using the app. I have a sense of identity with the app”.</p>	Liang, Li, and Turban [93]	Customers	Information Systems Success Model	Online survey	Partial Least Squares
Read, Robertson, McQuilken, and Ferdous [68]	Brand intimacy	social media	<p>“I feel more confident that the brand understands its customers; I feel that I would be more comfortable describing the brand to someone who was unfamiliar with it; I feel that I am more familiar with the range of goods and services that the brand offers; I feel that I have become more knowledgeable about the brand; I feel that I am likely to be following the brand’s Twitter feed one year from now”</p>	Aaker et al. [112]	Consumer	N/A	Online survey	Confirmatory factor analysis
Cheng, Huang, and Lai [71]	Brand intimacy	Running app	<p>“I feel emotionally close to this brand I receive considerable emotional support from this brand There is something special about my relationship with this brand This brand is warm”</p>	Sarkar et al. [113]	User	Technology Acceptance Model	Survey	Structural equation modelling

Table A3. Cont.

Authors	Concept	Context of Customer Intimacy	Measurement	Measurement Adopted from	Unit of Observation	Theory Used	Data Collection Method	Data Analysis Method
Kang and Gratch [114]	Virtual intimacy	Virtual agency	“Intimacy of users’ Verbal Self-Disclosure was calculated for their verbal responses. Users’ emotional state, perception of a computer interviewer, self-reported experience of social presence, rapport, self-reported self-disclosure, and perception of the quality of their own responses after the interaction”.	N/A	User	Uncertainty Reduction Theory	Experiment	Structural equation modelling
Garrouch and Ghali [115]	Customer intimacy	Mobile shopping apps	“The items described feelings about the shopping app provider, such as “cares about me,” “really listens to what I have to say,” and “really understands me.” A further two items assessed the sense that the customer “truly understands” the app and “knows” it for a long time”.	Adhikari and Panda [116]	Customer	Social Exchange Theory	Web survey	Structural equation modelling; cluster and multigroup analyses
Hernandez-Ortega and Ferreira [70]	User intimacy	Smart voice assistants	“I have an intimate relationship with my smart voice assistants (SVA) My communication with my SVA is intimate I have the help of my SVA in moments of need I feel great happiness when I use my SVA I feel emotionally attached to my SVA”	Sternberg [117]	Users	Triangular Theory of Love	Questionnaire	Structural equation modeling
Guan and Wang [8]	Customer intimacy	Websites	“The dimensions of website and customer intimacy relationship are website and customer reciprocity; website and customer self-discourse; website and customer empathy; website and customer similarity; website and customer interaction”.	Thorbjørnsen et al. [118]	Online shoppers	Social Exchange Theory; Social Penetration Theory;	Interviews; Questionnaire	Exploratory factor analysis and confirmatory factor analysis
Lee and Kwon [87]	Customer intimacy	Web-based service	“I enjoy my time at the relevant online shopping mall and feel well at ease I think of the relevant online shopping mall as a friend of mine I choose the relevant online shopping mall without any hesitation when purchasing goods on the Internet I feel a sense of intimacy with the relevant online shopping mall I feel purchasing goods at the relevant online shopping mall is a very important part of my consumption life”	Chelune and Waring [119], Tomasi [120]	Customer	N/A	Questionnaire	Confirmatory factor and correlation analysis

Table A3. Cont.

Authors	Concept	Context of Customer Intimacy	Measurement	Measurement Adopted from	Unit of Observation	Theory Used	Data Collection Method	Data Analysis Method
Liu et al. [121]	Customer intimacy	Mobile telecommunications	<p>“My mobile service provider cares for its customers. I like to communicate with my mobile service provider. I feel intimacy toward my mobile service provider.”</p>	N/A	Mobile phone users	N/A	Questionnaire	Structural equation analysis
Shim, Cho, and Sung [84]	Customer intimacy	AI agent	<p>From time to time, “I share my worries with AI agents,” “I pour out my troubles to AI agents,” “I relieve my stress by using AI agents,” “I complain one thing and another to AI agents,” “I enjoy talking with AI agents,” “I feel comfortable about talking with AI agents,” “I feel relieved after sharing my concerns or issues to AI agents,” “I would like to keep talking with AI agents,” and “I feel emotionally connected to AI agents”.</p>	Snell et al. [122]	AI agent users	N/A	Questionnaire	Regression analyses
Ku [19]	Customer intimacy	AI smart service	<p>“I am emotionally close to smart services in the airport; I feel very close to the smart assistant service in the airport; There is a close connection between the airport’s intelligent assistant services and me”.</p>	Song et al. [123,124]	AI agent users	N/A	Questionnaire	Partial least squares-Structural equation modelling

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