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Adoption of Disruptive Technologies in Marketing in Latin American Organizations: A Documentary Review

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ABSTRACT: The study analyzes the impact of disruptive technologies on marketing in Latin American organizations, highlighting their ability to transform business strategies through tools such as Big Data, IoT, artificial intelligence (AI) and machine learning (ML). These technologies make it possible to personalize services, optimize operations and improve interaction with customers in a competitive environment. The main objective was to examine the adoption of these technologies in Latin America, identifying key factors affecting their implementation and proposing strategies to optimize their integration. The methodology employed was qualitative, based on an exhaustive document review following the PRISMA method. Databases such as Scopus and Web of Science (WoS) were used to identify 868 initial documents, from which, after applying inclusion and exclusion criteria, 24 relevant studies were selected. In addition, grounded theory was used to analyze the data, categorizing them by means of open, axial and selective coding, which made it possible to identify patterns, trends and gaps in the literature. The main result reveals that, although disruptive technologies offer great opportunities, their implementation in Latin America faces significant challenges, such as socioeconomic inequality, poor technological infrastructure, lack of training in digital skills and inadequate government policies. These factors limit the ability of organizations to take full advantage of these innovations. The main conclusion highlights that overcoming these barriers requires strategic leadership, investment in technological infrastructure, continuous training and an innovation-oriented organizational culture. In addition, it is essential to design public policies that promote technological connectivity and reduce the digital divide. Finally, it is suggested that strategic alliances between companies, academic institutions and governments be fostered to share resources and knowledge, accelerating technological adoption and strengthening the competitiveness of organizations in the global digital environment.

Keywords: disruptive technologies, digital marketing, Latin America, artificial intelligence, digital transformation.

I. INTRODUCTION

The contemporary era is marked by unprecedented rapid technological acceleration, driven by the irruption of disruptive technologies that are significantly transforming the way organizations operate, compete, and engage with their customers [1]. As innovation processes intensify, managers need to comprehensively rethink the entire value creation chain, and digital transformation emerges as a constant process of organizational adaptation to the perpetually evolving societal landscape [2]. Innovations such as artificial intelligence (AI), Big Data analytics, the Internet of Things (IoT), Blockchain and cloud computing are no longer incremental tools but catalysts for structural change in various industries. To remain successful in a global and unpredictable marketplace, companies must capitalize on these innovations [3].

In this context, marketing emerges as one of the most impacted areas, evolving from traditional intuition-based approaches to hyper-personalized, predictive, and automated strategies designed to manage customer experiences in real time and across multiple touch points [4]. This not only optimizes communication and segmentation, but also allows brands to anticipate consumer needs and behaviours, creating more relevant and satisfying interactions at every touch point. The implementation of AI facilitates the personalization of interactions with consumers. This translates into more relevant customer experiences tailored to individual preferences, aligning with the evolution towards hyper-personalized strategies [5]. Thus, AI establishes itself as an essential catalyst for the evolution of marketing towards a more dynamic and customer-centric model.

Technology is rapidly evolving and drastically transforming industries and business environments, and disruptive technologies will continue to be a dominant theme in the coming years [6]. The adoption of disruptive technologies depends not only on the availability of these tools, but also on the organizational models that companies employ to integrate them into their strategic processes [2, 7]. Models such as TAM (Technology Acceptance Model), TOE (Technology-Organization-Environment) and dynamic capabilities have proven to be instrumental in overcoming internal and external barriers in digital transformation [8, 9]. However, in the Latin American context, these models must be adapted to address the economic, social and regulatory particularities of the region. Despite the vast amount of literature on digital transformation and disruptive technologies, we found a significant gap on how Latin American organizations have adopted and integrated these technologies in the marketing area taking into account their structural and contextual challenges. Among the most prominent challenges are the persistent digital divide and inequalities in technological infrastructure [10], lack of specialized talent and more conservative organizational cultures [11, 12]. Likewise, fragmented and evolving regulatory frameworks, especially in critical areas such as data protection, represent additional challenges that limit the ability of businesses to capitalize on the potential of these technologies, impacting AI adoption across different sizes of businesses, suggesting the need for policies that facilitate innovation while ensuring compliance and trust in the use of these technologies [13-15].

In this sense, the general problem addressed by this study focuses on the difficulty of Latin American organizations to effectively adopt disruptive technologies in the field of marketing, given the economic, social and cultural particularities of the region. This problem lies not only in the identification of relevant technologies, but also in the need to understand the organizational models that facilitate their adoption and the factors that condition their implementation. Moreover, the absence of strategies adapted to the specificities of the Latin American context perpetuates technological inequalities and reduces the ability of companies to compete in increasingly digitized markets. Therefore, the following study question is formulated:

- How is the adoption of disruptive technologies in Latin American organizations in the marketing area and what strategies can optimize their integration and exploitation?

Therefore, the overall objective of this study is:

- Analyze the adoption of disruptive technologies in Latin American organizations in the marketing area, identifying the key factors that influence their implementation and proposing effective strategies to optimize their integration and use.

While the specific objectives consist of:

- Identify the most relevant disruptive technologies in marketing and analyze how they are transforming business strategies.
- Examine the distinctive characteristics of the Latin American environment that affect the adoption of disruptive technologies in marketing.
- Analyze the main organizational challenges faced by Latin American companies when implementing disruptive technologies in marketing.
- Determine the organizational prerequisites necessary to achieve a successful implementation of disruptive technologies in marketing in Latin America.
- Establish strategic recommendations to facilitate the integration of disruptive technologies in the marketing strategies of Latin American companies.

- Propose an explanatory theory on the processes of adoption and integration of disruptive technologies in the marketing of Latin American companies.

This study not only seeks to describe the phenomenon of disruptive technologies in marketing, but also to offer a strategic and contextualized perspective that enables Latin American companies to successfully navigate the challenges of digital transformation. From a theoretical approach, the analysis is grounded in key concepts such as dynamic capabilities, technology adoption models and the specific characteristics of disruptive technologies, providing a robust conceptual framework to address the problem. On a practical level, the study offers actionable recommendations for companies in the region, aimed at overcoming organizational and structural barriers. From a social perspective, it also contributes to reducing the technological gap and promoting the competitiveness of organizations in globalized markets. In short, this work is positioned as a key tool for promoting more competitive, inclusive and sustainable marketing in Latin America.

II.RELATED WORK

1. DISRUPTIVE TECHNOLOGIES: TRANSFORMING THE MARKETING LANDSCAPE

The concept of disruptive technologies, introduced by Christensen (1997), represents a key framework for understanding the radical changes that certain innovations generate in markets and sectors [16]. Disruptive technology refers to innovations that alter or transform established industries and markets [17]. These technologies are not simply technical breakthroughs, but transform the rules of the game by offering new value propositions that may initially appear inferior from the perspective of traditional markets [18, 19]. However, these innovations succeed in capturing underserved or emerging segments thanks to attributes such as simplicity, lower cost, accessibility and convenience [20]. For the author, by simplifying processes, barriers that could have prevented the adoption of more complex technologies are eliminated. In this sense, disruptive technologies usually emerge in market niches considered unattractive by dominant companies, but over time they evolve and displace established technologies, profoundly modifying the structure of markets [21].

2. BACKGROUND OF THE STUDY: AN INNOVATION CONTEXT

Several research have addressed disruptive technologies and their adoption in various fields of knowledge, providing relevant empirical value to the present study. It has been evidenced that organizations can use digital technology to foster diversity and inclusion, boost creativity, and improve their ability to adapt and survive in the face of change, by implementing appropriate strategies [1]. It also highlights the central role of digital technologies in enhancing innovation and competitiveness, with important implications for managers and policy makers, underscoring the need for companies to strategically integrate such technologies to maintain long-term competitiveness in a rapidly changing digital environment [2]. Consequently, leveraging emerging technologies is not just an option, but a strategic necessity for companies seeking to thrive amidst today's technological disruption [7]. By adopting these innovations, companies can significantly transform their business models, uncover new opportunities, and ensure long-term success.

However, there are critical barriers to technology adoption, such as financial constraints, lack of skills, resistance to change, and external factors such as regulatory challenges and inadequate digital infrastructure [13]. As for the adoption of disruptive technologies in marketing, they can improve product and service offerings, optimize operations, and create new value propositions for customers [14]. However, in addition to the most identified non-technological issues such as markets, regulations and stakeholders, an important dimension that has been neglected is disruption in the context of behavior, practices and culture [20]. In summary, the reviewed studies provide theoretical and empirical foundations that enrich the understanding on the adoption of disruptive technologies, thus contributing to verify the state of the art and support the development of the titled study.

3. THEORETICAL FRAMEWORK FOR DISRUPTIVE TECHNOLOGIES: CONCEPTUAL FOUNDATIONS

The concept of disruptive technologies is based on various theories that explain their nature and their impact on markets. One of the main ones is Christensen's (1997) theory of disruptive innovation, which states that these technologies are not necessarily superior from the outset, but they manage to transform markets by focusing on underserved segments or with specific needs that are not covered by established technologies [22]. These innovations evolve to meet mass market needs, displacing traditional solutions. However, the theory is gaining traction, but it is still plagued by vagueness and post hoc definitional problems, meaning that the nature of disruptive innovation may remain unveiled [23].

On the other hand, Schumpeter' s (1942) theory of creative destruction complements this perspective by describing how technological innovations generate structural changes in the economy, replacing existing products, services and business models, which boosts economic growth and competitiveness [24]. Likewise, Rogers' (1962) theory of diffusion of innovations explains how these technologies manage to penetrate the market, starting with specific niches and eventually reaching mass adoption, describing the process by which users adopt the innovations in different stages [25]. In addition, the theory of dynamic capabilities argues that organizations must develop skills to adapt and respond to disruptive technological changes, detecting opportunities and transforming internal processes to take advantage of innovations [26]. Similarly, Adner' s theory of innovation ecosystems highlights that the success of these technologies depends not only on their development, but also on the effective collaboration among various actors within an innovation ecosystem, such as suppliers, regulators and consumers [27, 19].

These theories provide a solid conceptual framework for understanding the impact of disruptive technologies on markets and organizations, as well as the key factors that determine their adoption and success in specific contexts such as Latin America. For the marketing area, this implies that professionals must be attentive to innovations that, although they may initially seem inferior, have the potential to transform market dynamics by satisfying unmet needs. Identifying emerging segments and creating accessible and convenient value propositions become key strategies. In addition, the focus on developing dynamic capabilities enables organizations to adapt quickly to these changes, optimizing their internal processes and fostering a culture of innovation.

4. ORGANIZATIONAL TECHNOLOGY ADOPTION MODELS: KEYS TO SUCCESS

The adoption of disruptive technologies in organizations is not an automatic process, but a complex phenomenon influenced by various factors operating at the individual, group, organizational, and contextual level (28,25) To understand this process, it is essential to analyse the theoretical models that explain how organizations adopt and take advantage of technological innovations. Among the most prominent are the Technology Acceptance Model (TAM) and the Technology-Organization-Environment (TOE) Model, each of which addresses different dimensions of this phenomenon.

First, the Technology Acceptance Model (TAM), developed by Davis (1989), focuses on the individual factors that determine technology adoption. According to this model, two main variables influence the acceptance of a technology: perceived usefulness (PU) and perceived ease of use (PEOU) [29]. Perceived usefulness refers to the degree to which a person believes that using a technology will improve his or her performance, while perceived ease of use relates to the simplicity and effort required to use that technology [29, 30]. In the organizational context, these variables are essential, as employees and work teams must perceive that new technological tools are not only useful, but also easy to integrate into their daily activities. For example, in marketing, tools such as customer relationship management (CRM) systems and data analytics platforms must be intuitive to ensure their successful adoption.

Second, the TOE (Technology-Organization-Environment) Model, developed by Tornatzky and Fleischer (1990), extends the analysis by considering three key dimensions that affect technological adoption: technology, organization and environment [31]. In the technological dimension, aspects such as technology availability, functionality and compatibility are evaluated. In the organizational dimension, internal factors such as organizational culture, financial and human resources, and internal structure are considered. Finally, in the environment dimension, external factors such as market competition, government regulations, and

stakeholder pressure are analyzed [31, 32]. This model is especially relevant in the context of Latin America, where companies face specific challenges such as lack of technological infrastructure, shortage of specialized talent and regulatory restrictions.

In addition to these models, it is important to consider organizational challenges that may hinder technology adoption. In the case of the new technologies, resistance to change is one of the main obstacles, as employees may fear the unknown or perceive new technologies as a threat to their job stability [33]. Similarly, that technology adoption is based on dynamic capabilities, understood as the organizational ability to integrate, build and reconfigure internal competencies in the face of changes in the environment. This implies that companies must invest in training and retaining talent, as well as cultivating an organizational culture that promotes innovation and continuous learning [34]. Finally, success in technology adoption also depends on contextual factors. Uncertainty can limit the implementation of technologies such as Blockchain, thus connectivity and infrastructure gaps in Latin America represent a significant challenge for the digitization of businesses [35]. These contextual barriers must be addressed through public policies that promote investment in technological infrastructure and training of human talent.

III. MATERIAL AND METHOD

This study uses a qualitative approach to analyze the scenarios and organizational environments necessary for the effective adoption of disruptive technologies in marketing in Latin America, which allows a deep and contextualized understanding of the regional dynamics, challenges and opportunities through an exhaustive documentary review. The research is descriptive, by characterizing such technologies, adoption models and the particularities of the Latin American context, and analytical, by critically examining the factors that facilitate or limit their adoption in marketing, identifying relationships and strategic implications [36, 37].

FIGURE 1. Initial search for units of analysis in Scopus.

The research design is non-experimental and cross-sectional. No variables are manipulated, since the main objective is to analyze existing information on the subject through a documentary review. In addition, the study is conducted at a single point in time, which allows establishing a current overview of the phenomenon [37]. The study population consists of scientific articles that address disruptive technologies applied to marketing and their adoption in Latin America. The total number of documents identified in the initial search was 868, of which 368 were found in Scopus (Figure 1) and 500 in Web of Science (Figure 2), keywords such as disruptive technologies, marketing, innovation, adoption of disruptive technologies, technological disruption were included in the search.

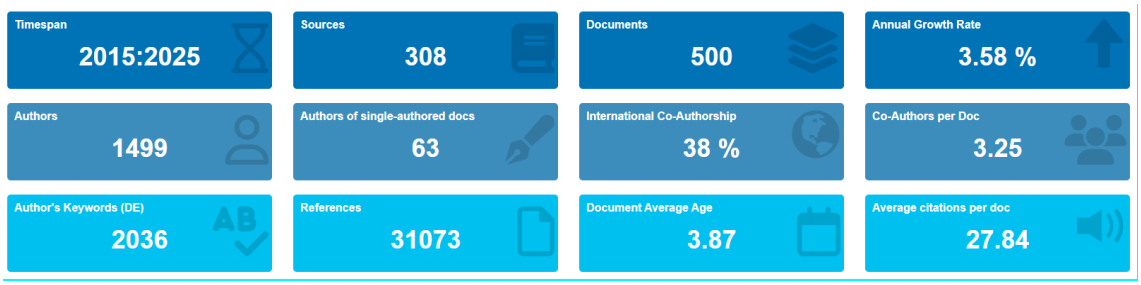

FIGURE 2. Initial search for units of analysis in Web of Science.

The sample includes relevant documents selected using the PRISMA method, which is characterized by its rigor and transparency in the identification, screening, eligibility and inclusion of the scientific literature. This structured approach minimizes biases and ensures the traceability of each decision made during the selection of sources, which strengthens the validity and reliability of the findings obtained in this study (38). After the selection process, the final sample consisted of 24 documents. For this purpose, a purposive sampling based on inclusion and exclusion criteria was used. Inclusion criteria considered papers published in the last 15 years, in English or Spanish, that addressed disruptive technologies, marketing and the Latin American context, while exclusion criteria eliminated duplicate studies detected through the Zotero reference manager, non-peer-reviewed publications and articles with insufficient or irrelevant information [39].

Regarding data collection techniques and instruments, documentary review and content analysis were used, applying systematic coding to classify and organize the information, which made it possible to identify patterns, trends and thematic gaps in the literature reviewed [37]. To organize and compile the key information from the selected documents, a document analysis matrix was designed that included author, year, contributions to the study questions and emerging codes (see Table 1-5).

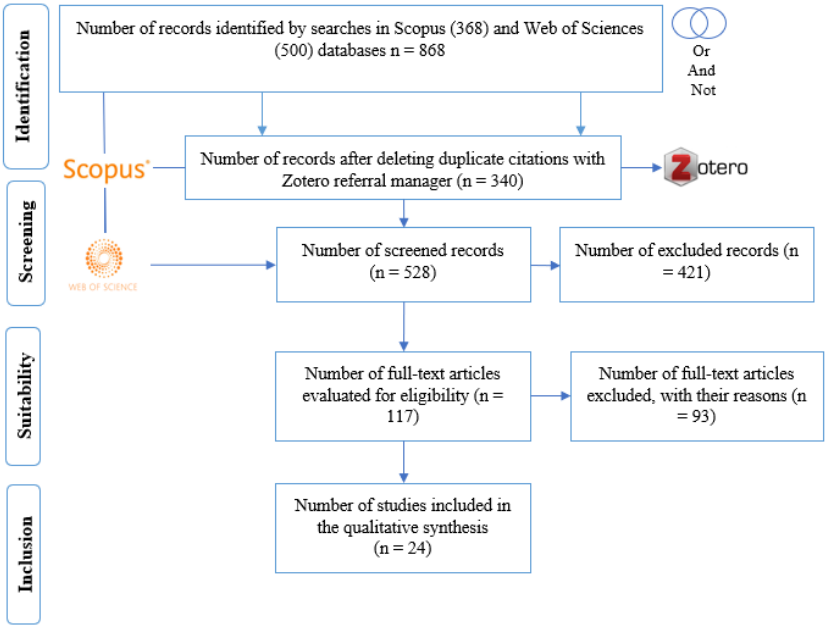

FIGURE 3. PRISMA methodological process in the selection of units of analysis.

The literature analysis procedure was developed in four stages according to the PRISMA method: identification (search in Scopus and Web of Science), screening (elimination of duplicates and irrelevant), eligibility (evaluation of inclusion/exclusion criteria) and inclusion (final selection). After screening with PRISMA, an external analysis was performed to examine the relevance of the findings in the Latin American context, identifying convergences and divergences. Finally, an internal content analysis was performed to assess the coherence, depth and relevance of the arguments in each paper, considering their methodological quality and the validity of the sources [38, 40].

After the content analysis, the data was coded, starting with the open coding, which consisted of identifying and segmenting significant units of information, assigning preliminary labels to emerging concepts within the documentary analysis. Subsequently, axial coding was applied, through which categories and subcategories were organized and related, establishing connections between the variables and deepening the relationships between the identified phenomena. Finally, selective coding made it possible to integrate and refine the central categories, synthesizing the most relevant findings. This systematic process ensured an interpretation consistent with the objectives of the study and made it possible to highlight patterns, trends, and gaps in the literature, facilitating the formulation of strategic recommendations through the application of the phases of Grounded Theory [36, 41]. Finally, the results were elaborated according to the objectives of the study, highlighting the practical and theoretical implications, and the main findings were synthesized to formulate strategic proposals on the adoption of disruptive technologies in marketing in Latin America.

As for the reliability and methodological rigor, it was guaranteed through the triangulation of sources and the use of the ATLAS.ti software for the coding and management of the codebook, which allowed a systematic and replicable organization of the categories and subcategories. Credibility was reinforced with an audit trail of each stage of the process, while confirmability was ensured by documenting analytical decisions in ATLAS.ti, facilitating traceability and transparency of results.

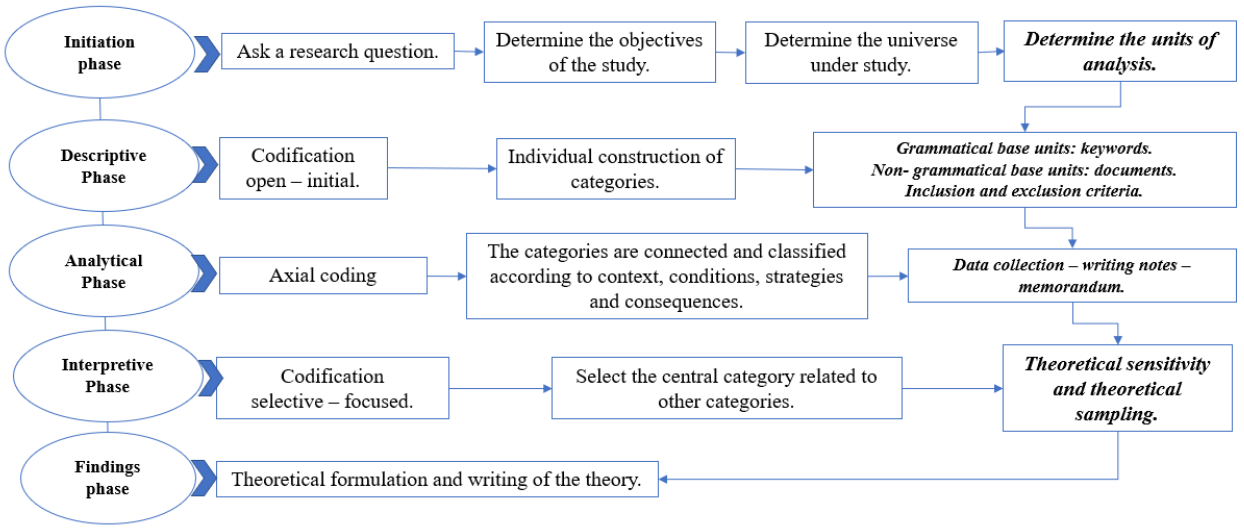

FIGURE 4. Methodological process for data analysis according to grounded theory.

IV.DATA ANALYSIS

The following is the results and discussion of the study on the adoption of disruptive technologies in marketing, focusing on how they are transforming business strategies.

Table 1. Descriptive phase open coding: disruptive technologies in corporate marketing.

Codes	Question **1. What are the most relevant disruptive technologies in the field of marketing and how are they transforming business strategies?**
Artificial Intelligence, Internet of Things	Artificial intelligence (AI) and the Internet of Things (IoT) transform business strategies by creating ecosystems of technological interdependence where the success of an innovation depends on the ability of other actors to adapt [6, 42].
Inteligencia Artificial, Machine Learning	Companies should be attentive to the evolution of managers' expectations regarding Artificial Intelligence (AI) and Machine Learning (ML) in marketing, adjusting their approaches accordingly [15, 43].
Big Data	Big Data allows companies to better understand the unmet demands and expectations of consumers, which contributes to the sustainable success of the business [44].
Big Data	Big Data Analytics (BDA) development is not only focused on the internal organization, but also on the entire supply chain. It has been reported that companies with successfully developed BDA capabilities, both technical and human, can achieve superior supply chain performance [45].
Internet of Things	The Internet of Things (IoT) offers opportunities to improve product support and customer relationship management using real-time data [46].
Artificial intelligence	AI enables better assimilation and analysis of customer data, helping companies anticipate, plan, and take advantage of future opportunities [47].

Note: Own elaboration.

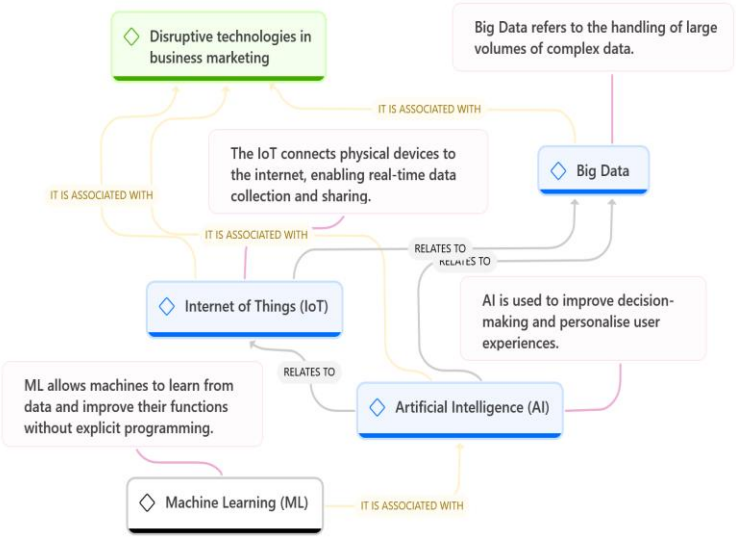

FIGURE 5. Analytical phase axial coding: disruptive technologies in business marketing. elaboration with atlas ti. 24.

Interpretative phase and discussion of the results of Disruptive Technologies in business marketing.

According to Figure 5, the interconnection between key disruptive technologies in enterprise marketing: Big Data, Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning (ML), facilitate data collection and analysis, but also transform the way companies interact with their consumers and optimize their operations. In this regard, it can be inferred, firstly, that Big Data is essential for handling large volumes of complex information [44]. Big Data is a specific strategic activity for the collection, management and analysis of data in order to extract useful information to support marketing decisions [45]. The challenge of Big Data lies in ensuring data quality and having the right hardware and software infrastructure for real-time analysis, especially in regions with few technological resources. However, most organizations are not prepared to upgrade their existing IT systems to meet the requirements of Big Data [48]. On the other hand, IoT connects physical devices to the internet, which facilitates real-time data collection and improves operational efficiency [46]. The IoT enables physical objects to listen, visualize and perform activities by allowing them to communicate with each other to exchange information and support business decisions. However, data security and interoperability between devices remain critical concerns that businesses need to address, such as data breaches, hacking, privacy violations, and unauthorized access to devices and networks [49, 50].

Likewise, it can be deduced that, AI improves decision making and personalizes user experiences, AI can learn and adapt from historical data, offering more accurate solutions [47]. However, their implementation requires a thorough understanding of the algorithms and an ethical approach to avoid biases in the results [5]. The implementation of AI in marketing presents legal risks due to the exploitation of customer data for personalization without complying with specific regulations. Despite its growing adoption, AI faces significant hurdles, such as the need for robust hardware and advanced processing power to run deep and machine learning algorithms, which complicates and makes it expensive to implement [15, 51]. Finally, ML allows machines to learn from data and to improve their functions without explicit programming [32]. Mitchell (1997) highlights its importance in applications that require real-time adaptability. The integration of ML with Big Data and AI expands the possibilities for automation and personalization [1, 51]. However, companies should be cautious with ML models, ensuring that they are transparent and explainable to avoid wrong decisions [33].

These results can be analyzed from the TOE model, since the adoption and effective use of technologies such as Big Data, IoT, AI, and ML in marketing depends on technological factors (infrastructure, compatibility, and data quality), organizational factors (human talent, culture of innovation, and internal preparation), and the environment (regulations, competition, and available resources) [31]. Successful integration of these technologies in Latin America requires not only overcoming technical barriers, but also strengthening organizational capacities and responding to the region's own contextual conditions [31, 32].

Table 2. Open coding descriptive phase: characteristics of the Latin American environment and the adoption of disruptive technologies in marketing.

Codes	Question **2. What distinctive characteristics of the Latin American environment affect the adoption of disruptive technologies in marketing?**
cultural diversity, socioeconomic inequality, poor technological infrastructure, inadequate government policies, lack of training in digital technologies	cultural diversity, which requires customizing marketing strategies according to local preferences, and socioeconomic inequality, which limits access to technologies in certain segments of the population. In addition, poor technological infrastructure in some areas makes it difficult to implement new digital tools. Government policies and a positive regulatory framework can foster innovation, while a lack of training in digital technologies among employees hinders their adoption [14].
informal institutions, low connectivity, public policy makers	Informal institutions and low global connectivity in the configuration of interactions hinder disruptive innovation and industrial evolution within and between nations. Policymakers could do to influence the degree of adoption of such innovations [52].

limited access to information and communication technologies (ICT), low investment in research and development (R+D)	There is a significant digital divide, where rural areas and disadvantaged communities have limited access to information and communication technologies (ICTs). In addition, investment in research and development (R+D) is low compared to other regions [53].

Note. Own elaboration

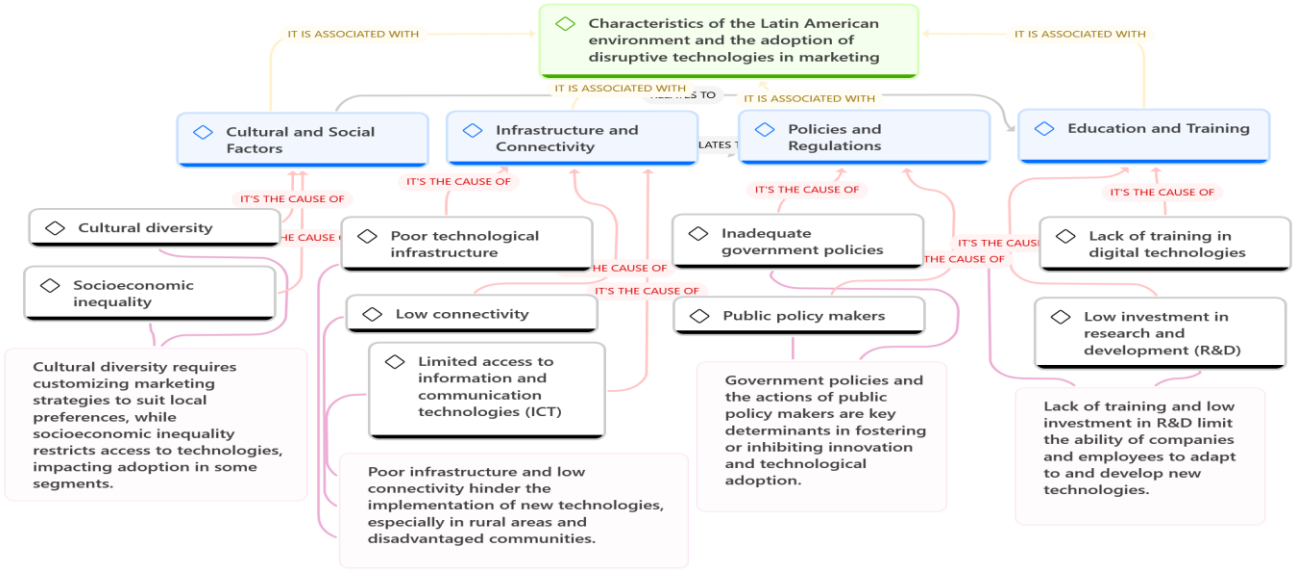

FIGURE 6. Axial coding analytical phase: Characteristics of the Latin American environment and the adoption of disruptive technologies in marketing. Elaboration with Atlas ti. 24

Interpretive phase and discussion of results of the characteristics of the Latin American environment and the adoption of disruptive technologies in marketing

Figure 6 shows the connections between the factors that characterize the Latin American environment and how this influences the adoption of disruptive technologies in marketing. The first factor that is evident in the connections is the cultural diversity and socioeconomic inequality in the region, which are determinants for the adoption of disruptive technologies [1, 27]. The need to customize marketing strategies to meet local preferences is supported by research highlighting the importance of cultural adaptation in marketing. Similarly, the socio-economic inequality that restricts access to technology on the digital divide in Latin America. The second factor that emerges from the review is the technological infrastructure, which is deficient, accompanied by low connectivity as a significant barrier. The lack of adequate infrastructure limits the implementation of advanced technologies, especially in rural areas [48]. This is consistent with the limited access to information and communication technologies (ICTs) in the countries of the region [54]. Another relevant factor that characterizes the region is inadequate government policies and the actions of policy makers [55]. In this context, effective public policies are essential to overcome barriers and promote technological adoption. In this context, effective public policies are essential to overcome barriers and promote technological adoption.

Likewise, it was found that the lack of training in digital technologies and low investment in research and development (R&D) limit progress in Latin American countries, hindering the adoption of disruptive technologies and their application in marketing [54, 14]. In addition, education in digital skills is fundamental for companies and employees to adapt to new technologies. In addition, investment in R&D is critical for technological development. Hence, the results are based on Christensen's theory of disruptive innovation, which points out how new technologies disrupt underserved markets and, over time, displace traditional

solutions [22]. Similarly, Schumpeter's theory of creative destruction complements this approach by describing how these innovations generate structural changes in the economy and marketing [24].

Table 3. Open coding descriptive phase: organizational challenges in the implementation of disruptive marketing technologies in Latin American companies.

Codes	Question 3. What are the main organizational challenges that Latin American companies face when implementing disruptive technologies in marketing?
high adoption costs, staff skills	high adoption costs that especially affect small and medium-sized enterprises (SMEs) and skills gaps that require continuous training of staff. Organizational inertia can hinder change and make it difficult to adopt innovations, while a lack of agility to adapt to rapid market transformations and changing consumer expectations represents an additional challenge. In addition, the integration of new technologies with existing systems can lead to inefficiencies, and the absence of a strategic vision can lead to the failure of innovation initiatives [7, 23].
organizational inertia, adoption of innovations, lack of agility to adapt to changes, integration of new technologies with existing systems, absence of a clear strategic vision	
management of technological interdependencies, high implementation costs, lack of trained personnel, resistance to organizational change, need to adapt to market transformations	the management of technological interdependencies, high implementation costs, lack of trained personnel, resistance to organizational change, and the need to adapt quickly to market transformations [42].
integration capacity, absorption capacity, knowledge management capacity	integration capacity, absorptive capacity, and knowledge management capacity are key organizational factors that affect the perception of usefulness and ease of use of technology [2, 31].
organizational culture, managers' expectations	companies face both drivers and barriers in implementing AI and ML in marketing. Organizational culture and managers' expectations play a crucial role in how these technologies are adopted [43].
intangible capabilities, business orientation, knowledge integration	intangible capabilities, specifically entrepreneurial orientation and knowledge integration, as essential capabilities for the development of a data-driven innovation capabilities model for companies [45, 52].
consumer preferences and behaviors	consumer preferences and behaviors change rapidly, which can make it difficult to adapt marketing strategies [56].
Concern about job losses	Concerns about job losses can slow down the adoption of advanced technologies [53].
lack of support from senior management, legal and regulatory frameworks, infrastructure, resistance to change	the lack of support from senior management is a critical barrier that can influence the adoption of disruptive technologies, and legal and regulatory frameworks, infrastructure, and resistance to change were identified as the main challenges [48].

Note. Own elaboration

Figure 7 illustrates the complex organizational challenges faced by Latin American companies when implementing disruptive technologies in marketing. First, the ability to manage knowledge and absorb new technologies stands out as a relevant factor for successful integration [54, 14]. This implies that companies must develop internal skills to adapt quickly to market transformations, a task that is not easy due to changing consumer preferences and concerns about job losses.

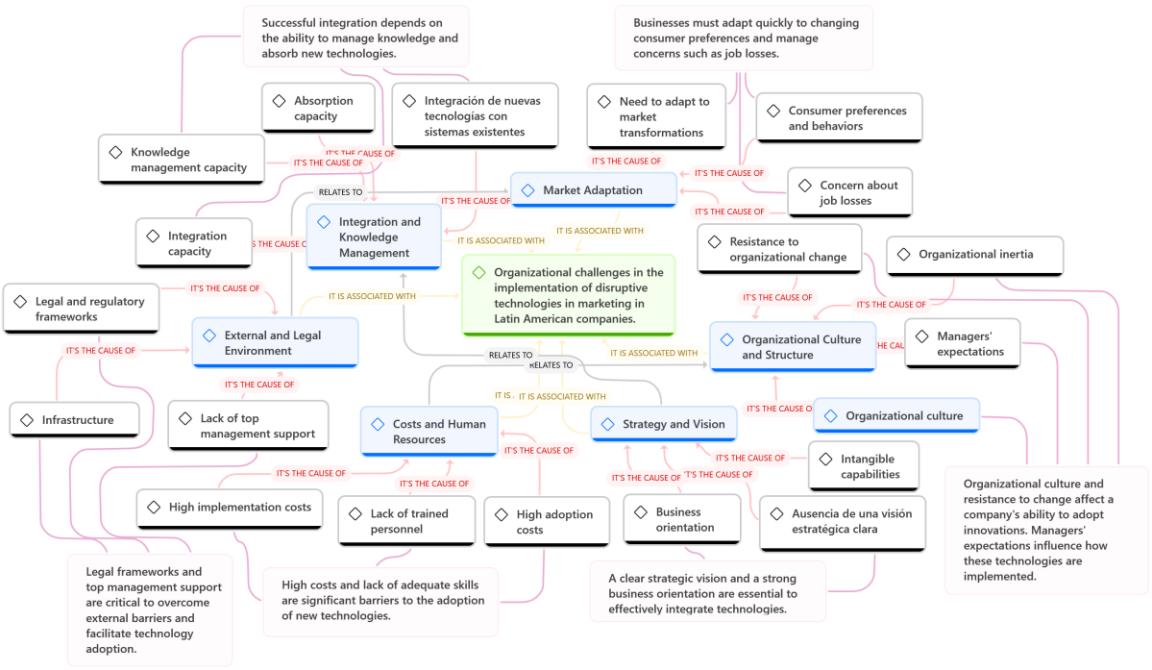

FIGURE 7. Axial coding analytical phase: organizational challenges in the implementation of disruptive marketing technologies in Latin American companies. elaboration with atlas ti. 24.

Interpretative phase and discussion of results of organizational challenges in the implementation of disruptive technologies in marketing in Latin American companies

In addition, the external and legal environment plays a determining role in this process. Legal and regulatory frameworks, together with top management support, are essential to overcome external barriers and facilitate technology adoption [55, 57]. However, poor infrastructure and high implementation costs represent significant obstacles [35]. The lack of trained personnel exacerbates this situation, underscoring the need to invest in training and skills development [30]. On the other hand, organizational culture and resistance to change constitute internal barriers that affect a firm's ability to adopt innovations [57]. Managers' expectations have a significant influence on how these technologies are implemented, suggesting that visionary leadership is critical [58]. In this sense, a clear strategic vision and a solid business orientation are essential to integrate technologies effectively. Finally, it highlights the connection and importance of addressing both internal and external factors in the implementation of disruptive technologies. Companies must not only improve their knowledge absorption and management capacity, but also navigate a complex legal and regulatory environment, all while cultivating an organizational culture that favors innovation and change. These organizational challenges are primarily grounded in dynamic capabilities theory, which holds that companies must develop internal skills to adapt to and respond to disruptive technological changes, managing knowledge, and transforming internal processes [27, 19].

Table 4. Open coding descriptive phase: organizational prerequisites for the successful implementation of disruptive marketing technologies in Latin America.

Codes	**4. What organizational prerequisites are necessary for a successful implementation of disruptive technologies in marketing in Latin America?**
commitment of senior management, fostering an organizational culture,	The commitment of senior management is essential for the adoption of disruptive technologies in marketing. Foster an organizational culture that encourages innovation. Continuous training: Invest in programs that develop

continuous training, developing skills in artificial intelligence and data analysis, robust technological infrastructure: software and hardware	skills in artificial intelligence and data analytics. A robust technological infrastructure is required that includes the necessary software and hardware [17, 9].
technological readiness, leveraging IT investment, professional experience and skills, security concerns, government advocacy, technological infrastructure.	technological readiness, investment in IT through different channels, professional experience and skills, change management capabilities, security concerns, government advocacy, and salient factors for the country context such as government policy/regulation, technological infrastructure, and culture are necessary to refine the TOE framework [28, 8].
foster a culture of innovation, explore new strategies and technologies.	Fostering a culture that values innovation and experimentation, allowing the company to explore new strategies and technologies [11].
organizational culture, leadership, communication, employee engagement	organizational culture, leadership, communication, and employee engagement are emerging as critical factors for the successful adoption of disruptive innovations [59].

Note: Own elaboration.

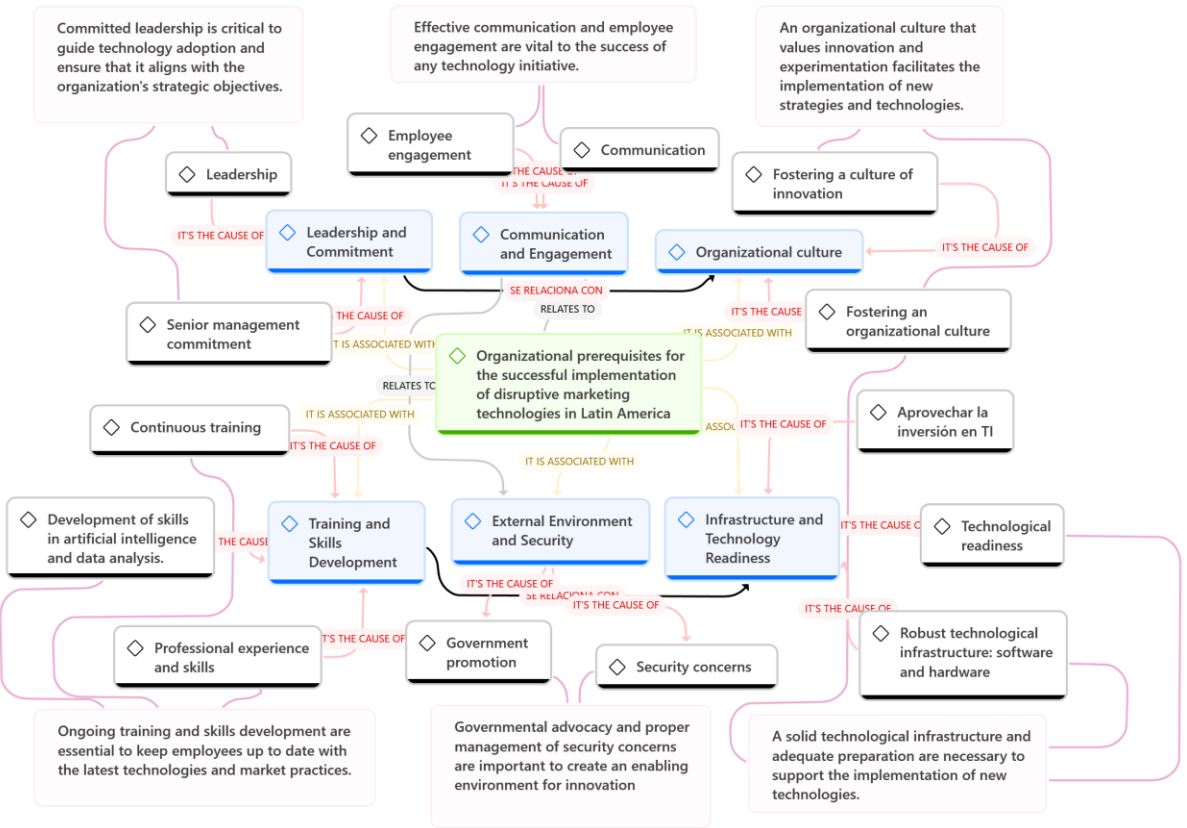

FIGURE 8. Open coding descriptive phase: organizational prerequisites for the successful implementation of disruptive marketing technologies in Latin America. elaboration with atlas ti. 24.

Interpretive phase and discussion of results of the organizational prerequisites for the successful implementation of disruptive technologies in marketing in Latin America.

Figure 8 provides a comprehensive view of the organizational prerequisites necessary for the successful implementation of disruptive technologies in marketing in Latin America. Starting with a committed leadership which is fundamental to guide the adoption of these technologies and ensure that they are aligned with the organization's strategic objectives [17, 9]. This leadership must be accompanied by top management commitment, which facilitates the creation of a favorable environment for innovation [57, 58].

Furthermore, a connection can be visualized between effective communication and employee engagement as factors for the success of any technological initiative, together with the use of social media platforms for marketing and advertising, as well as for communications with customers, becomes a necessity for the survival of the business sector in Latin American countries [59]. To achieve this goal, companies must foster an organizational culture that values innovation and experimentation, which is essential for implementing new strategies and technologies effectively. Organizational culture, therefore, becomes a pillar that supports technological transformation [59].

On the other hand, continuous training and skills development are indispensable to keep employees up to date with the latest technologies and market practices [14]. This includes developing skills in artificial intelligence and data analytics, which are key areas in today's digital environment [9]. The experience and professional skills of employees also play an important role in this process [13, 17].

Similarly, infrastructure and technology readiness are other critical components. A robust technology infrastructure and adequate readiness are necessary to support the implementation of new technologies [10, 35]. This is complemented by government promotion and proper management of security concerns, which are important to create a favorable environment for innovation [14, 28].

These results are based on the TOE model, establishing that the adoption of disruptive technologies in Latin American marketing depends on the interaction between three key dimensions: the available technological infrastructure, organizational capabilities and culture, including leadership and training, and external factors such as government support and regulations. Thus, the TOE model explains that only through the balance and alignment of these factors is it possible to achieve successful technological integration in organizations in the region [31, 32].

Table 5. Open coding descriptive phase: strategic recommendations for integrating disruptive technologies in Latin American business marketing.

Codes	Question **5. What strategic recommendations can be offered to Latin American companies to facilitate the integration of disruptive technologies into their marketing strategies?**
develop internal capacities through training, promote effective leadership, innovation-focused organizational culture, increase investment in research and development (R+D), establish strategic partnerships with other organizations	develop internal capacities through training and skills development of staff, promote effective leadership that fosters an organizational culture focused on innovation. Increase investment in research and development (R+D). In addition, establishing strategic collaborations with other organizations will allow for the sharing of resources and knowledge [13, 7].
ethical framework for AI and ML	a clear ethical framework for AI and ML, especially in decisions that affect customers [43, 35].
integrating IoT devices into products	integrate IoT devices into products to improve customer satisfaction and generate sustainable competitive advantages
leveraging connected devices to collect data, applying machine	leveraging connected devices to collect real-time data on customer behavior and improve customer experience, applying machine learning techniques to predict

learning techniques to predict customer behaviors	customer behaviors, such as identifying high-value customers and predicting churn [46, 47].

Note. Own elaboration

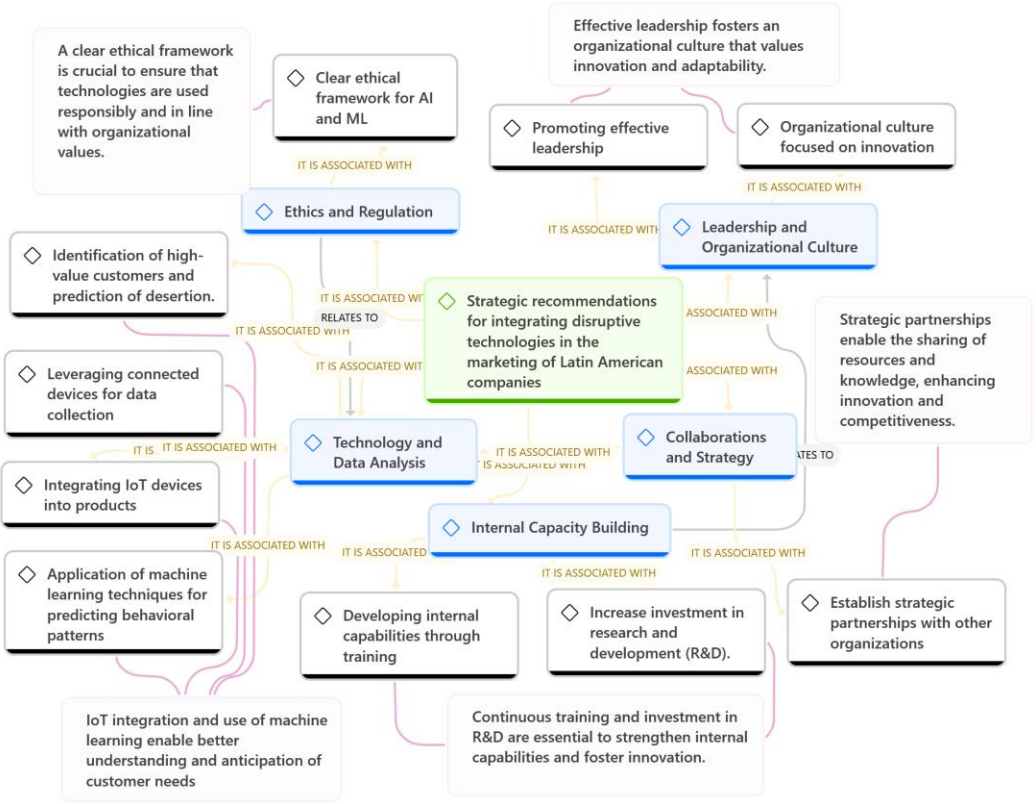

FIGURE 9. Axial coding analytical phase: strategic recommendations for integrating disruptive technologies in Latin American business marketing. elaboration with atlas ti. 24.

Interpretive phase and discussion of results of strategic recommendations to integrate disruptive technologies in the marketing of Latin American companies.

Figure 9 shows the integration of disruptive technologies in the marketing of Latin American companies, which requires a multidimensional approach that encompasses ethics, leadership, technology, internal capacity building and strategic collaborations. A clear ethical framework is essential to ensure that technologies such as artificial intelligence and machine learning are used responsibly. In addition, establishing ethical guidelines helps to align technological innovations with organizational values, promoting trust and acceptance among stakeholders [5, 43].

Similarly, it can be deduced that effective leadership plays a key role in promoting an organizational culture that values innovation and adaptability. The visionary leadership fosters an environment conducive to change and innovation. In addition, an innovation-focused culture facilitates the implementation of new strategies and technologies in a competitive environment and constantly evolving [11, 12, 58]. Technology and data analytics make it possible to identify high-value customers through the use of connected devices and machine learning techniques [47]. The integration of AI and IoT into products improves the understanding and anticipation of customer needs. The implementation of digital technologies can transform the way companies interact with their customers, offering personalized and enhanced experiences [46, 49].

The development of internal capabilities through continuous training and investment in R&D strengthens organizational competencies [53]. From there the importance of dynamic capabilities for innovation and sustainable growth. Training and R&D not only improve internal skills, but also foster an environment of constant learning and adaptation [49]. Finally, strategic collaborations allow the sharing of resources and knowledge, enhancing innovation and competitiveness. Open innovation involves collaborations with other organizations to take advantage of external opportunities and accelerate technological development. These strategic partnerships can be especially beneficial in the Latin American context, where collaboration can compensate for limited resources and capabilities [60]. Hence, the integration of disruptive technologies in marketing, as shown in Figure 9, is mainly based on the theory of dynamic capabilities, which explains the need to develop internal skills and foster organizational learning to adapt to technological changes [26].

- Theoretical Formulation Phase

The explanatory theory on the processes of adoption and integration of disruptive technologies in the marketing of Latin American companies is based on a contextualized and relational integration process, where the interconnection of tools such as Big Data, Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning (ML) redefines business strategies through advanced analytics and personalization. However, this process does not occur in an isolated or uniform way but is profoundly conditioned by the dynamic interaction between structural, cultural, organizational and technological factors specific to the region.

FIGURE 10. Theoretical formulation: adoption of disruptive marketing technologies in Latin American organizations. elaboration with atlas ti. 24.

In this framework, disruptive technologies are directly related to the development of internal capabilities, organizational culture and leadership, as well as to business strategy and vision. In turn, these dimensions are associated with and modulated by the external environment, which includes the available infrastructure

and connectivity, regulatory and legal frameworks, and the influence of social and cultural factors. For example, cultural diversity and socio-economic inequality not only represent barriers, but also require specific adaptation strategies and context-sensitive knowledge management.

The theory holds that overcoming identified barriers such as insufficient technological infrastructure, high costs, and a shortage of skilled talent depends on committed leadership, sustained investment in infrastructure and training, the establishment of clear ethical guidelines, and the formation of strategic alliances both internally (between departments and teams) and externally (with other organizations, institutions and actors of the ecosystem). These connections facilitate technological integration and enhance the ability to adapt to the changing environment. In consequence, technological integration in Latin American marketing is a relational and adaptive process, conditioned by the network of interactions between internal and external factors. Its success depends on the ability of organizations to strategically articulate these connections, manage knowledge, and adapt their strategies to the particularities of the regional and organizational environment. Thus, the adoption of disruptive technologies in the region is not a universal or automatic phenomenon, but the result of a collective and contextualized construction, in which technology, culture, leadership, and environment converge.

V. CONCLUSION

In conclusion, the research shows that the technological revolution in Latin American marketing, driven by the interconnection of Big Data, IoT, AI and ML, offers great opportunities for the personalization and optimization of business strategies. However, the adoption of these technologies faces significant challenges arising from the structural and cultural conditions of the region, which requires adaptive and collaborative approaches. To fully realize the potential of disruptive technologies, companies must invest in infrastructure, strengthen innovative leadership, promote a change-oriented organizational culture, and establish strategic alliances. In addition, the development of public policies that encourage connectivity, digital training and research is essential. Only through this comprehensive and contextualized approach will it be possible to overcome existing barriers and enhance the competitiveness of companies in the emerging digital environment.

The research presents some significant implications, in terms of digital transformation, since it can reduce competitive disparities and improve organizational efficiency, at least if there is an active and continued commitment of the different actors, companies, the State and society, to create an innovation ecosystem. Likewise, this research has limitations especially in relation to its dependence on secondary sources and the lack of comparative empirical studies in the different sectors or countries of Latin America that prevent extrapolating its results. It is therefore recommended that future research broaden its scope, for example, by conducting case studies, carrying out quantitative studies or delving deeper into the impact of disruptive technologies on specific market segments. It would also be interesting to analyze public policies and their impact on the adoption of technology or the set of digital skills that may be required for transformative marketing in the region.

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Conflict of Interests

The authors declare no conflict of interest.

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