RESEARCH ARTICLE

From IFCX to CXMMI: Validation and Evolution of a Customer Experience Management Maturity Model

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ABSTRACT This study presents the evolution of the IFCX model into the Customer Experience Management Maturity Index (CXMMI), a comprehensive framework for assessing and benchmarking the maturity of customer experience management in organizations, by focusing on employee perceptions. Utilizing a rigorous methodology that includes comprehensive literature analysis, database access for questionnaire validation, scale construction, and sector comparison, data from 611 participants in Brazilian manufacturing, service, and technology sectors were collected using a 41-question survey covering six dimensions. High internal consistency reliability was demonstrated by Cronbach's Alpha, and advanced statistical techniques such as MCA, PCA, LOESS, and Cluster Analysis were used to develop the maturity scale. The results demonstrate the effectiveness of the CXMMI in evaluating critical dimensions of customer experience management like journey, culture, governance, processes and communication, indicators and technology, and segmentation and differentiation. The practical application of the CXMMI provides companies with a valuable tool for internal assessment and benchmarking, enabling continuous improvements in customer experience management practices. The originality of this study lies in the comparison, for the first time in academia, of academic and managerial models of customer experience measurement, culminating in the evolution to the CXMMI.

INDEX TERMS Customer experience management, CX, CXM, CXMMI, IFCX client experience, consumer experience, maturity model.

I. INTRODUCTION

Several academic studies confirm that satisfying and generating positive customer experience (CX) for both B2B and B2C markets bring benefits to loyalty and long-term partnerships. Customer experience is increasingly recognized as a crucial factor in establishing and maintaining a competitive advantage, as evidenced by numerous academic studies and industry reports [1], [2]. Perceived value, trust, and customer experience have a positive influence on customer satisfaction, which in turn influences customer loyalty significantly and positively [3]. Satisfaction with in-store shopping experience components leads to customer satisfaction and long-term

retention and loyalty [4]. Improving the satisfaction experience of a business partner can reduce the likelihood of conflicts in the business channel and foster stronger long-term relationships [5]. Scholarly and corporate attention has been directed towards understanding and shaping customer experience behavior [6]. Global interest in customer experience is steadily growing [7]. Despite the substantial body of research on customer experience, there is a notable gap in methodologies that measure CX from the employees' perspective. Employees are at the forefront of customer interactions and can offer a unique perspective on the strengths and weaknesses of current CX strategies.

Customer experience can be defined from both the company's and the consumer's perspectives. While customer experience refers to the behavior and emotions experienced

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by customers, customer experience management is defined as a set of processes, strategies, and practices to manage customer experience [8]. Studies in customer experience management (CXM) highlight the importance of developing a comprehensive metric for its evaluation [9], [10], and a framework that could be applied across industries to manage the total customer experience [9]. Despite the existence of various methods to measure customer experience from a consumer behavior perspective, such as those proposed by [11], [12], and [13], there is a notable lack of academic approaches to assess customer experience from a business management perspective.

In a pioneering study, Klink et al. [14] devised a scale to measure customer experience management, focusing particularly on its consequential impact on financial performance. Their model employs three customer experience management themes, or "patterns," drawn from Homburg et al. [15] work: cultural mindsets, strategic directions/intentionality, and capabilities for continually renewing customer experience. They combine these three customer experience management constructs with four other constructs related to the firm's performance, namely "financial performance," "market turbulence," "competitive intensity," and "technological turbulence." The original goal was to develop a tool to aid researchers in understanding customer experience management, rather than helping companies improve their performance practically. Additionally, the authors recognize that further studies are needed to add more details to the customer experience management constructs, such as necessary behaviors and activities, to improve the proposed customer experience management measurement scale.

Torres-Dávila et al. [16] is also one of the few academic articles that insisted on discussing maturity models in customer experience. The authors demonstrated that the expansion of an online website alone is not sufficient for customers, as companies do not consider a good shopping experience a priority. Therefore, they proposed a maturity model that assesses the E-commerce customer experience, using emotions, metrics, and the application of tactics. The study, conducted in a Small and Medium Enterprise in the retail sector, showed the simplicity and practicality of its use.

In addition to comparing our customer experience management maturity index with the academic model, we also scrutinized models from consulting firms. Although these models offer practical insights into measuring customer experience management from a firm's perspective and present theory-based diagnostic tools, their practical applicability in real-world organizational settings is often limited. This observation underscores the need for a more pragmatic and widely applicable model, which aims to bridge the gap between theoretical and practical utility in diverse organizational contexts.

The lack of a benchmark tool or framework in the literature for measuring and comparing customer experience management could potentially deter companies from seeking improvements in their overall customer experience. One approach that could help organizations is the use of maturity models [17]. Maturity models assess organizational performance and help identify performance gaps, allowing for continuous improvement [18]. They can also be instruments to assess organizational elements and select the most appropriate actions at each stage, enabling higher levels of maturity [17].

Due to the lack of methods to measure the impact of internal practices on customer experience from the employees' perspective and the absence of a validated customer experience management maturity scale, our objective is to provide a model that reconciles academic rigor with practical relevance, helping companies evaluate and compare themselves to create better experiences for their customers.

The primary aim of this article is to propose a customer experience management maturity scale that is based on employees' perceptions. Their insights are invaluable for identifying areas where organizations can improve their processes and strategies. The proposed tool, termed the Customer Experience Management Maturity Index (CXMMI), aims fundamentally to bridge the literature gap identified regarding the need for practical methods to measure customer experience in terms of management.

Our contribution in developing the Customer Experience Management Maturity Index distinguishes itself from other academic and consulting models in several significant ways. Firstly, the index expands the framework to include six dimensions and 41 statements, enhancing the comprehensiveness and reliability of customer experience measurement within organizations. Secondly, it introduces five distinct maturity levels, allowing for in-depth performance comparisons across industries. Lastly, unlike other models that predominantly collect data from managers, the index focuses on capturing employees' perceptions, providing a broader range of insights and perspectives. This approach enables a more holistic assessment of customer experience management, considering viewpoints across various organizational departments, thereby facilitating a more integrated and company-wide adoption of customer experience management practices.

To propose the Customer Experience Management Maturity Index, we utilized a range of statistical techniques including Cronbach's Alpha, Multiple Correspondence Analysis (MCA), Principal Component Analysis (PCA), Locally Estimated Scatterplot Smoothing (LOESS), and Clustering Analysis. The subsequent section will explore the theoretical groundwork underpinning this study.

II. CONCEPTUAL BACKGROUND
A. CUSTOMER EXPERIENCE MANAGEMENT AND ITS MEASUREMENT
The trajectory of company-client relationships has been changing over the years, and one of the key elements is the experience provided to customers, which tends to be increasingly valued over simply providing products and services. Abbott [19] argued that customers desire satisfying

experiences more than products. Later, Dewey [20] emphasized the significance of "unique" experiences in consumer decision-making. Chahal and Dutta [21] noted that the term customer experience gained popularity due to Carbone and Haeckel [22], and Pine and Gilmore [23].

Holbrook and Hirschman [24] suggested that consumers are not purely rational, and value and price cognition only partially explain consumer behavior. Thus, the focus was on enhancing the consumption experience, which is cognitive, hedonic, symbolic, and aesthetic. Initially, researchers defined "experience" as playful leisure activities, sensory pleasures, aesthetic pleasure, and emotional response [21]. Customer experience has gained attention from researchers and practitioners who advocate creating a unique, enjoyable, and memorable experience for customers [9].

Customer experience is carried out with various actors who interact with the organization, and there are reports of a lack of metrics in this field of knowledge. Customer experience management is the strategic process of managing the experiences of customers with suppliers [8]. Customer experience is not solely constructed from customer interactions, but rather is shaped by the broader network of actors that interact with the organization, including managers, employees, and partners [25], [26], [27].

Studies on customer experience emphasize the need to develop a robust metric for its measurement [9], [10]. A framework for managing the total customer experience that can be applied across different industries needs to be developed and validated [9]. In academia, the concept of customer experience management is poorly understood, fragmented, insufficiently demarcated from other marketing management concepts [15]. customer experience is a nuanced concept, which poses a challenge in terms of its measurement [8].

B. MANAGEMENT MATURITY MODELS

Companies are continuously seeking to develop not only products and services, but also management models that can be assimilated and used in order to become increasingly competitive, and one of them is the maturity model. Maturity models provide organizations with a simple yet effective set of tools for measuring the quality of their processes [28]. The categorization of managerial levels or phases of any process facilitates analysis and understanding, thereby improving organizations' productivity [29]. These frameworks are typically designed to assess the maturity of a selected domain based on a set of criteria that can be easily understood [30]. Maturity models are composed of stages or maturity levels [31]. A more mature organizational practice is typically associated with higher performance and less variability. The purpose of maturity models is to identify the conditions in which examined objects reach the best possible state for their intended purpose [28]. A completely "mature" organizational element, therefore, represents an ideal standard against which organizations can increase their own performance [28].

Maturity models are important to be implemented in companies for several reasons. These frameworks allow companies to continually improve their work [18]. They aim to evaluate organizational performance with management support, enabling continuous improvement [18], and therefore aid companies in surviving competition [17]. The aforementioned models can also be viewed as instruments for evaluating organizational components and identifying the most suitable actions at each stage, facilitating the advancement of these components to progressively higher levels of maturity [17].

Despite some criticisms regarding their lack of empirical or theoretical foundation and oversimplification of reality [32], maturity models are considered useful as they can improve process quality and performance, reduce expenses and inconsistencies, and increase employee productivity and engagement [33]. Due to their proven benefits, hundreds of organizations worldwide use these models [34].

C. THE IFCX AND ITS EVOLUTION

Research on management maturity is crucial for identifying problems and opportunities for improvement in companies. In the realm of customer experience, Enescu [35] highlights the importance of measuring maturity for business outcomes and the relevance of involving employees in this process. Diego Torres-Dávila [16] proposed a specific model for retail, while Kim [36] developed the CEMC for manufacturing companies. Maklan and Klaus [37] warn that many companies still measure customer experience based on traditional criteria related to product and service evaluation. This variety of approaches and models reflects the complexity and ongoing need for evolution in measuring customer experience management maturity.

Within this evolving context, our extensive review of academic and practical literature on customer experience measurement highlighted the need to refine indices related to customer experience maturity assessment in companies. This review, encompassing academic articles, industry reports, surveys, and existing models, aimed to identify and compare various customer experience maturity models, as detailed in the methodology section.

The 2018 Customer Experience Focus Index (IFCX) [38] emerged as a prominent model in Brazil, comprising 6 dimensions and totaling 42 questions. It is recognized for its comprehensive application across industries and its significant reputation. The choice of IFCX for comparison and evolution into the Customer Experience Management Maturity Index was driven by factors like its complete questionnaire availability, extensive respondent database, and its application across diverse industries. Our research aligns with the broad applicability of customer experience principles across diverse industries. Studies like those by [39], [40], and [41] emphasize that customer experience management is versatile and relevant in various industry types. This universal relevance is echoed in our findings, which show consistent

application and effectiveness of customer experience across different sectors, highlighting its pivotal role in modern business practices.

This reexamination allowed us to identify the strengths and limitations of the IFCX, forming the foundation for our research. The development of Customer Experience Management Maturity Index as an evolution of IFCX was based on several key findings. For instance, the introduction of an additional maturity classification category in the index resulted in a more refined five-level categorization compared to the four levels of IFCX. The new index category definitions were data-driven, based on significant statistical analyses, unlike the IFCX's predefined intervals.

The maturity stage classification in the index aligns with the capability maturity model integration and is derived from the statistical analysis of the IFCX database. According to Carnegie Mellon University [42], the capability maturity model integration is designed to help organizations improve their product and service development. For Rohit [43], capability maturity model integration is applicable and useful to enhance organization competence not only in software but also in service delivery management.

In summary, the analysis of maturity models in customer experience management unveils a dynamic and diverse landscape, fostering the creation of a practical and applicable approach for organizations to enhance their practices in this area. The Customer Experience Management Maturity Index proposed in this article focuses on various elements such as customer experience management and its measurement, management maturity models, the evolution from IFCX, and the capability maturity model integration. The following methodology section will detail the steps taken in this research.

III. METHODOLOGY

The research process consisted of five stages, as depicted in Figure 1 below.

A. RETRIEVAL OF POTENTIAL SOURCES AND SELECTION OF CXM MATURITY MODEL

In the initial stage of our methodology, we conducted a targeted search in the Web of Science and Scopus databases to identify scholarly articles relevant to customer experience measurement. Our selection criteria focused on academic articles and reviews in English that contained the phrase "customer experience" in their titles and were associated with measurement-related expressions such as "analysis", "appraisal", "assessment", "evaluation", "measurement", "valuation", "rating', "index", or "indicator'. From an initial pool of 104 papers, 89 were excluded for not presenting a customer experience measurement model, leaving 15 articles for meticulous analysis. Our examination centered on key aspects: what is measured, the research target, customer experience management measurement, and propositions of a customer experience management maturity scale.

The outcomes of the literature review conducted in this section, encompassing academic sources, reveal that out

#	Stage	Inputs	Outputs
3.1	Retrieval of potential sources and selection of CXM maturity model	Papers: collections from Web of Science and Scopus databases. Amazon, and Google Books. Consulting firm websites.	104 initial articles screened, 15 selected and analyzed (Table 1). Evaluation of 10 books related to customer experience (Table 2). Analysis of 7 consulting firm CX maturity models (Table 3). Comparison of CXM maturity indices (Table 4).
3.2	IFCX Database Access	Access to IFCX database containing respondent data in Excel format.	Compilation and analysis of 672 responses across 42 statements in six dimensions, foundational for CXMMI development (Table 5).
3.3	Questionnaire and Internal Consistency Answer Validation	Responses from 672 participants across 42 statements in six dimensions.	Validation and consistency check, resulting in 611 valid responses. One of 42 statements excluded due to inconsistency, maintaining six dimensions' structural integrity (Table 6).
3.4	Construction of CXMMI Maturity Scale and Sector Comparison	Detailed analysis of validated questionnaire responses.	Development of a comprehensive maturity scale with five distinct levels: initial, managed, defined, quantitatively managed, optimizing. Categorization based on statistical analysis and industry sector benchmarking (Tables 7, 8, and 9), (Figures 2, 3, 4, and 5).
3.5	Analysis and Results	Detailed analysis of collected data.	Content for Discussion and Conclusion sections, generating findings and insights for CX development in academia and for businesses to improve performance (Table 10), (Figure 6).

FIGURE 1. The research process framework encompasses five stages.

of 15 identified references concerning customer experience measurement, 14 evaluate the experience from the customer's perspective. Merely two are linked to assessing customer experience from a company management viewpoint. Furthermore, a single reference broaches the subject of the maturity scale, as depicted in Table 1.

To enrich the research sources, a comprehensive analysis was conducted on books with "customer experience" in the title, focusing on reader ratings from the top pages of search results on Amazon.com. Additionally, we broadened our research protocol to include another source of book information, Google Books. Using the protocol [intitle: "customer experience" intitle:(measure OR measurement OR gauge OR assess OR evaluate OR quantify OR index OR maturity)], we identified 9 more relevant works for our analysis. The evaluation revealed the 10 books with the highest ratings, presenting a summary of their key attributes and insights in Table 2.

To further enrich our research sources, we included 7 customer experience maturity models from consulting firms. Our decision to analyze both books and consulting maturity models was based on the understanding that they can provide practical and applied perspectives on measuring customer experience, complementing academic sources.

We analyzed various aspects of these models, such as the number of dimensions within the model, the quantity of questions included, the type of maturity scale utilized, the availability and publication status of the maturity questions, and whether the respondent database was accessible to other researchers. In total, we identified seven pieces of evidence regarding customer experience management maturity models from consulting firms, all of which were analyzed. It is

TABLE 1. This table presents a detailed comparison of various customer experience measurement approaches identified in the scientific literature, along with an identification of customer experience maturity scales.

REFERENCE	TITLE	WHAT IS MEASURED	RESEARCH TARGET	CX MANAGEMENT MEASURED	CXM MATURITY SCALE PROPOSED
[88]	A Machine Learning Based Classification Method for Customer Experience Survey Analysis.	A statistical analysis was performed to better study whether there is a clear and precise association between the scores of the NPS and customer experience performance indicator attributes.	External/customer	No	No
[89]	A model to assess customer alignment through customer experience concepts.	Proposition of an IT maturity measurement model with customers, where customers are actors in the companies' external environment.	Internal/employee	No	No
[90]	Call center service level: A customer experience model from benchmarking and multivariate analysis.	Internal benchmarking as a diagnostic tool and description of the user's perception of key call center performance indicators.	External/customer	No	No
[84]	Customer experience quality: an exploration in business and consumer contexts using repertory grid technique.	The article proposes to explore whether there are differences in the construction of the customer experience in B2B and B2C contexts.	Internal/employee	No	No
[13]	EXQ: a multiple-item scale for assessing service experience.	The Customer Experience Quality (EXQ) scale allows tracking the customer experience and its key attributes over time, proposing to be a new marketing metric.	External/customer	No	No
[91]	How to measure post-purchase customer experience in online retailing? A scale development study.	OPPCE introduces significant parameters to help retailers improve the transaction-related experience and achieve customer repurchase.	External/customer	No	No
[21]	Measurement and impact of customer experience in banking sector.	Measuring customer experience and its impact on satisfaction and brand equity in the banking sector.	External/customer	No	No
[14]	Measuring customer experience management and its impact on financial performance.	A scale was developed to measure the company's customer experience and the relationship between customer experience and the financial performance of companies in various industries was measured.	Internal/employee	**Yes**	No
[12]	Measuring customer experience in physical retail environments.	Proposition and validation of a scale to measure customer experience in physical retail environments (in-store customer experience (ISCX).	External/customer	No	No
[11]	Measuring customer experience in service: A systematic review.	Identification of how the customer experience in the service sector is measured in publications in the field of marketing.	External/customer	No	No
[92]	Measuring customer experience quality: The EXQ scale revisited.	The research confirms previous findings on The Customer Experience Quality (EXQ) scale and proposes a new step towards generalizing this scale.	External/customer	No	No
[93]	Measuring the Customer Experience in Online Environments: A Structural Modeling Approach.	Customer behavior while browsing the web was studied through items such as skill and control, levels of challenge and arousal, focused attention and interactivity.	External/customer	No	No
[16]	The Customer Experience Maturity Model in the E-Commerce Processes.	The study suggests a maturity model that measures the e-commerce customer experience, using emotions, metrics and tactics.	External/customer	No	**Yes**
[85]	The evaluation of customer experience using BP neural network-taking catering O2O takeout.	The article establishes a multi-dimensional customer experience rating index system for take-out meal consumption.	External/customer	No	No

TABLE 1. *(Continued.)* This table presents a detailed comparison of various customer experience measurement approaches identified in the scientific literature, along with an identification of customer experience maturity scales.

[94]	Tuning of Customer Relationship Management (CRM) via Customer Experience Management (CEM) using Sentiment Analysis on Aspects Level.	Customer experience is studied by combining cognitive and affective components and the impacts on future customer experiences are discussed.	External/customer	No	No

important to note that a significant portion of these companies does not openly disclose the details of their maturity model, as can be seen in Table 3.

In this phase, we conducted a detailed analysis of the gaps in existing models for measuring customer experience management. This involved a comparative examination and contrasting of 2 scientific articles from the analysis in Table 1, 1 specialized book from the analysis in Table 2, and 2 consultancy models from the analysis in Table 3. This new comparison allowed us to identify shortcomings and inconsistencies. Our focus was on assessing the number of industries covered, number of measured items, dimensions, existence of a proposed customer experience management maturity scale, practical implications, and data accessibility. This critical analysis enabled us to identify key gaps in current literature and practices, select one [38] of the 5 sources analyzed, and guide the subsequent steps of accessing the model database, validating the questionnaire and internal consistency of answers, and constructing the customer experience management maturity scale for sector comparison. This analysis can be observed in Table 4.

B. IFCX DATABASE ACCESS

The second stage involved gaining access to the database, which was granted free of charge by the organizers of IFCX, a Brazilian customer experience consultancy and research company. The IFCX database comprises 42 statements divided into six dimensions. To measure each statement, a questionnaire was developed using statements that describe a company's desired customer experience practice, as detailed in Table 5.

The respondents, 672 in total, were front-line employees from 121 companies across three key sectors: manufacturing, services, and technology. These employees, including both specialists and managers, were directly involved in customer experience management within their organizations. The manufacturing sector included respondents from chemical, steel production, pharmaceutical, automotive, petroleum, and packaging companies. The services sector included responses from financial, educational, consulting, logistics, hospitality, and health services companies. The technology sector included respondents from companies that develop and sell technological solutions, mainly IT. The database resulting from the application of the IFCX was formed by a nonprobability convenience sampling and originated from the responses of front-line employees who answered the questionnaire using online survey technology. Sekaran and Bougie [34, p.300] remark on the validity of this sampling method, stating, "A nonprobability sampling design in which information or data for the research are gathered from members of the population conveniently accessible to the researcher".

C. QUESTIONNAIRE AND INTERNAL CONSISTENCY ANSWERS VALIDATION

The third phase of the methodology involved conducting a descriptive statistical analysis of the database. Of the initial pool of 672 responses, 61 were discarded due to partial completion of the questionnaire. Consequently, the analysis was based on 611 valid responses, which included 205 from the manufacturing sector, 266 from services, and 140 from the technology sector. We utilized the Likert scale as the response method, which is a bipolar multi-item scale presenting a continuum between two polar opposites. The scale encompassed five response options: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. Vaske et al. [45] contend that the internal consistency reliability of items from such a scale can be ascertained by Cronbach's alpha [46]. Sekaran and Bougie [44] argue that this is the most frequently utilized test for consistency between items. Out of the 42 statements deployed, 41 were validated. Details of this validation will be provided in the Results section.

In the article, Cronbach's alpha is employed as a widely recognized and objective measure of reliability. This statistic, as referenced in [45], [47], [48], [49], [50], and [51], is extensively used to assess the internal consistency of multi-item scales and ensure the reliability of research instruments. By utilizing Cronbach's alpha, the research is strengthened in terms of validity, aligning with established practices in reliability assessment.

D. CONSTRUCTION OF THE CUSTOMER EXPERIENCE MANAGEMENT MATURITY SCALE AND SECTOR COMPARISON

Our methodological framework and statistical analysis were anchored in Churchill's proposition [52] for enhanced measurement of marketing constructs. The construction of the maturity scale in our study involved investigating the multivariate relationships between responses to Likert scale statements across the six dimensions examined. The Likert

TABLE 2. This table represents the analysis of customer experience maturity models from books.

REFERENCE	TITLE	NUMBER OF DIMENSIONS IN THE MODEL	NUMBER OF QUESTIONS IN THE MODEL MATURITY SCALE USED	PRESENTED MATURITY QUESTIONS	SCALE OF MATURITY USED	RESPONDENT DATABASE AVAILABLE TO RESEARCHERS?
[95]	B2B Customer Experience: A Practical Guide to Delivering Exceptional CX	N/A	N/A	N/A	N/A	N/A
[96]	Customer Experience 3.0: High-Profit Strategies in the Age of Techno Service	N/A	N/A	N/A	N/A	N/A
[97]	Customer Experience Management: A Revolutionary Approach to Connecting with Your Customers	N/A	N/A	N/A	N/A	N/A
[38]	Gestão do Relacionamento e Customer Experience [CRM & Customer Experience].	4	42	Yes	Absent, undefined, targeted, intensive.	Yes
[98]	Greatness is NOWHERE: Three Principles to Jazz up Your Culture, Pep up Your People, and Spice up Your Customer Experience.	N/A	N/A	N/A	N/A	N/A
[99]	How to Win at Business: Transform Your Customer Experience from a Maze to Amazing.	N/A	N/A	N/A	N/A	N/A
[100]	Mastering the Sales Recipe: Creating Memorable Customer Experiences and Sales Success Paperback.	N/A	N/A	N/A	N/A	N/A
[72]	The Customer Experience Manual: How to design, measure and improve customer experience in your business	N/A	10	Yes	Starting, evolving, maturing, maintaining.	N/A
[101]	The Power of Customer Experience: 5 Elements To Make An Impact.	N/A	N/A	N/A	N/A	N/A
[102]	Transform Customer Experience: How to achieve customer success and create exceptional CX	N/A	N/A	N/A	N/A	N/A

Scale, with responses ranging from "strongly disagree" to "strongly agree" (1 to 5), regards these as ordered categories, thus treating them as ordinal qualitative variables. Utilizing Multiple Correspondence Analysis (MCA), as recommended by [53], [54], and [55], facilitated the conversion of the frequencies of these ordered categories into interval scales. Consequently, the multivariate relationships in each dimension were assessed using MCA.

In constructing the scale, we applied MCA and Principal Component Analysis (PCA) to analyze the multivariate

relationships between participant responses. MCA, recommended by Le Roux and Rouanet [56] for qualitative data, was used to convert frequencies of ordered categories into interval scales. This technique is effective in capturing the multidimensional essence of data, as evidenced in previous studies [53], [57].

Subsequently, PCA, a robust technique for dimensionality reduction [58], was employed to combine thematic indicators into a global maturity indicator. PCA is widely acknowledged as an effective technique for dimensionality reduction

TABLE 3. This table represents the analysis of customer experience maturity models from consulting firms.

REF.	TITLE	NUMBER OF DIMENSIONS IN THE MODEL	NUMBER OF QUESTIONS IN THE MODEL MATURITY SCALE USED	PRESENTED MATURITY QUESTIONS	SCALE OF MATURITY USED	RESPONDENT DATABASE AVAILABLE TO RESEARCHERS?
[76]	A Maturity Model for Customer Experience Management	N/A	N/A	N/A	Initial, developing, defined, managed, optimized.	N/A
[103]	Customer experience management maturity model	5	N/A	N/A	Ad hoc, centralize, manage, optimize, inform.	N/A
[63]	Customer Experience Maturity Assessment	4	20	Yes	aspiring, active, performing, elite.	N/A
[104]	Customer Experience Maturity Assessment	N/A	N/A	N/A	N/A	N/A
[62]	Customer Experience Maturity: Assessment	5	20	Yes	Very weak, weak, adequate, strong, very strong.	N/A
[74]	The Customer Experience Management Maturity Model	6	30	Yes	N/A	N/A
[75]	The Gartner Customer Experience Management Maturity Model	5	N/A	N/A	Initial, developing, defined, managed, optimized.	N/A

in multidimensional research [58]. PCA offers efficient and reliable analysis in complex studies, facilitating the interpretation and understanding of data patterns [59], [60]. The application of these techniques ensures a deeper and more reliable analysis of the data.

The utilization of MCA led to the creation of a perceptual map, visualizing the associations between responses to the statements and the underlying construct of each dimension. The perceptual map was constructed using two factor axes, capturing most of the total information inherent in the contingency table. Furthermore, the primary factorial axis captured the majority of this total information, thereby forming the foundation for creating a scale capable of positioning respondents along the underlying construct of each dimension. Following the application of MCA to each of the six dimensions, the respondents were situated on six scales, resulting in six indicators with values in the range [0,1] for each respondent. Subsequently, these six indicators were linearly amalgamated into a global indicator via Principal Component Analysis, as advocated by Johnson & Wichern [61] for such analyses.

Taking inspiration from the widely used capability maturity model integration model [42] the global indicator scale was divided into five clusters. The boundaries of these clusters were determined by applying cluster analysis [61] to the scores of the respondents in the global indicator. As a result, each stratum consisted of respondents with similar scores in the global indicator and, thus, similar profiles in the six dimensions that were analyzed. Qualitatively, each stratum was interpreted in terms of customer experience management maturity as follows: level 1: initial (cluster 1), level 2: managed (cluster 2), level 3: defined (cluster 3), level 4: quantitatively managed (cluster 4), level 5: optimizing (cluster 5).

IV. ANALYSIS AND RESULTS
A. GAPS ANALYSES IN CUSTOMER EXPERIENCE MANAGEMENT MEASUREMENT MODELS
In evaluating scientific articles on customer experience measurement, we observed that only one article [14] presented a business management perspective, though it did not propose a maturity scale. This finding, as seen in Table 1, indicates a significant gap in the scientific literature regarding the measurement of customer experience management maturity from a management maturity model perspective, emphasizing the need for more robust models that consider the internal perspective of organizations, not just their customers' perspectives.

Regarding books on customer experience, we found that only one [38], as detailed in Table 2, offered substantial information on dimensions, number of questions, maturity issues, and the maturity scale used in customer experience management, and also made its database available to researchers. In analyzing consultancy maturity models,

TABLE 4. Comparison of customer experience management approaches among scientific articles, consulting reports, and specialized books.

REF.	PUBLICATION TYPE	PROPOSED NAME OF THE CXM MATURITY MEASUREMENT	RESPONDENTS OF THE SURVEY	NUMBER OF INDUSTRIES COVERED	NUMBER OF MEASURED ITEMS	DIMENSIONS	CXM MATURITY SCALE PROPOSED	PRACTICAL IMPLICATIONS
[62]	Consulting report	Customer Experience Maturity: Assessment	N/A	N/A	20	Investigate, initiate, mobilize, scale, embed.	Yes	Identify companies' maturity stage for comparison.
[63]	Consulting report	The CXMA assessment	N/A	N/A	20	Design, operationalize, engage, improve.	N/A	It helps companies plan and set up a roadmap for practicing customer experience.
[14]	Scientific article	N/A	233	10	28	Cultural mindset toward CXs, strategic directions for designing CXs, and firm capabilities of continually renewing CXs.	N/A	Prescriptive guidelines on when to invest in CXM for financial gain.
[16]	Scientific article	Customer Experience Maturity Model in the E-Commerce Processes	50	1	5	Tactics, metrics, emotions	Yes	Applied emotions, metrics, and tactics in a small retail business.
[38]	Specialized book	Customer Experience Focus Index - IFCX	611	21	42	Customer journey, customer centric culture, governance, process and communication, KPIs and technology, segmentation and differentiation.	Yes	Understand firm CXM stage through employee perception and analyze managerial gaps.

identified in Table 3, we discovered that only two [62], [63] openly presented the number of dimensions, questions, and the maturity scale used, as well as maturity issues. This observation underlines the trend of limited transparency and the restricted availability of detailed information in consultancy models, reinforcing the need for more accessible and detailed models to assess maturity in customer experience management.

In a subsequent analysis, as demonstrated in Table 4, we compared different views by comparing articles, books, and consultancy maturity models in customer experience. This analysis revealed several nuances in the approach to customer experience management. Consultancy reports, such [62] and [63], offer practical models for assessing customer experience management maturity, but with limited details about their methodologies and without open disclosure of respondent data. On the other hand, scientific articles like the studies by Klink et al. [14] and Torres et al. [16], while offering robust theoretical models for measuring customer experience, present limitations in practical applicability and details on the construction of the maturity scale.

The model Customer Experience Focus Index (IFCX) [38], meanwhile, achieves a balance between theory and applica-bility, providing a detailed and practical model, backed by an extensive and accessible database. This highlights the importance of an integrated approach that combines academic rigor with practical relevance for effective customer experience management.

B. INTERNAL CONSISTENCY RELIABILITY

We evaluated the internal consistency reliability using Cronbach's alpha [45]. The high results obtained from this analysis, displayed in Table 6, illustrate the reliability of the responses. Additionally, the Cronbach's alpha coefficient yielded an overall score of 0.963. When applied in this type of analysis, a Cronbach's alpha value within a certain range signifies high internal consistency. Hence, the result confirmed a high level of internal consistency, as shown in Table 6.

Based on the provided table, it can be concluded that all six dimensions show a high degree of internal consistency, as demonstrated by their respective Cronbach's alpha values. Each value is notably above the commonly accepted threshold of 0.7 for good reliability [64], [65], which indicates that the statements used to measure each dimension are closely related as a group.

TABLE 5. This table presents the 41 survey statements resulting from the validation process of the CXMMI.

DIMENSION	STATEMENT
CX-Journey	The company performs daily and real-time measurements of the Customer's experience in order to understand how they act in relation to the contact channels.
	The impact on the Customer regarding the quality of products and services is measured and dealt with in real time and starts from the moment they are launched.
	Customers feel engaged by the company and act as brand advocates.
	The service provided by the company conveys promptness, reliability, security and speed to the Customer.
	The company uses a modern and participatory method to constantly map the Customer Journey to identify failures and opportunities.
	Customer Journey mapping results are used consistently to optimize products, services and customer communication.
	The vast majority of Customer requests are resolved in the first contact with the face-to-face and remote service channels.
CX-Centric Culture	There are daily individual and collective efforts for the Customer to be the center of attention and truly have their needs met by the company.
	Employees are constantly encouraged and believe it is worthwhile to make exceptional efforts to engage Customers.
	Customers and Employees perceive that attendance through on-site and remote channels is one of the company's biggest differentials.
	The company makes constant efforts to level the vision of the entire organization regarding the value that the Customer has for the business.
	Employees who interact with the Customer are constantly trained using modern sales and service methodology.
	Employees who DO NOT directly serve the Customer are agile in carrying out the tasks that impact them and add value to them.
	Front-line employees are always ready to serve in order to welcome the Customer without queues and in a productive way.
CX-Governance	The projects developed by Marketing, Business, Logistics and IT take into account Customer Focus from conception to implementation.
	Customer Voice is part of the board's agenda and constantly reads examples of consumer problems and makes decisions.
	The direction of senior executives as to the priority that the Client should have is reinforced by coherent decisions and investments coming from them.
	The relationship area provides the business areas with real-time information on the performance of campaigns, products and services.
	The company's processes have agile mechanisms to alert managers before a problem with the Customer turns into a crisis.
	Customer complaints solutions are intelligently stored and used as an example so that similar cases do not occur again.
	Customer feedbacks are collected in real time, prioritized and processed quickly and influence the company's strategy.
CX-Processes and Communication	Relationship processes and procedures are structured and constantly redesigned for optimization and innovation.
	Attendants and salespeople have easy access and quickly find information to respond assertively to Customers.
	The business rules that impact the Customer are always optimized in order to allow easy understanding by the same and autonomy of the attendant.
	Communication with the Customer, in whatever channel, is stored in its history, allowing prompt service and measurement of indicators.
	The company carries out daily external and exempt quality monitoring to identify and deal with service and sales problems.
	The scripts and phraseologies for human, automated and web service are elaborated with excellence and constantly revised.
CX-Indicators and Technology	Employees in the company's internal areas are constantly informed about the Relationship Management indicators.
	Customer relationship indicators influence the performance evaluation and the bonus of the company's executives.
	The company measures in real time Customer Satisfaction, First Call Resolution – FCR, Net Promoter Score – NPS and Churn.
	The analysis of these indicators is agile and allows for the creation of actions and transformations in the short, medium and long term in favor of the Client.
	Current technology allows the company to be omnichannel, quickly and resolutely integrating all contact channels.
	Technology allows all Relationship Management indicators to be measured safely and in real time.
	Existing systems and processes are modern and contribute to excellence in Customer relationships and experience.
CX-Segmentation and Differentiation	Market segmentation provides agility, resolution and differentiation in customer service and sales.
	When the Client is assisted remotely or in person, she is identified as to her potential and history, using technology.
	Customers with a greater history of problems are identified at the time of service so that the company can provide them with a differentiated service.
	The customization and personalization of the Customer's experience is favored by market segmentation during customer service.
	Content management favors the personalization and customization of written and spoken communication to the Customer.
	Long-lived Customers are recognized and rewarded for this loyalty behavior.
	During human or automated service, the Customer is immediately identified and routed to the most appropriate channel.

More specifically, the CX-Journey dimension has an alpha of 0.838, the CX-Centric Culture dimension has an alpha of 0.820, CX-Governance stands at 0.850, CX-Processes and Communication at 0.832, CX-Indicators and Technology at 0.864, and CX-Segmentation and Differentiation has an alpha of 0.865. Moreover, the overall Cronbach's alpha for all 41 statements across the six dimensions is 0.963. This high value further substantiates the robustness of the internal consistency of the items on the scale, affirming that the entire set of items is measuring the same underlying concept.

DIMENSION	NUMBER OF STATMENTS	ALPHA
CX-Journey	7	0.838
CX-Centric Culture	7	0.820
CX-Governance	7	0.850
CX-Processes and Communication	6	0.832
CX-Indicators and Technology	7	0.864
CX-Segmentation and Differentiation	7	0.865
Cronbach´s Alpha total	**41**	**0.963**

In conclusion, these results validate the reliability of the items used to assess each of the six dimensions and the entire scale.

C. DEVELOPMENT OF THE CUSTOMER EXPERIENCE MANAGEMENT MATURITY INDEX (CXMMI)

The proposed methodology for constructing the Index maturity scale was implemented in an R environment [66], and the results are presented below. Figure 2 illustrates the perceptual maps generated by applying MCA to analyze the responses in each dimension. The application of MCA explicitly recognizes that the encoding of Likert scale responses 1, 2, 3, 4, and 5 is an ordinal (not interval and ratio) variable [67]. Moreover, multiple correspondence analysis is a type of factor analysis suitable for categorical data. Therefore, we believe that the approach adopted was mathematically more justifiable than the usual approach of simply summing the Likert scale scores.

Each perceptual map captured approximately 70% of the total variance. The first factorial axis (horizontal axis) accounted for over 50% of the variance in four maps and slightly over 48% in the other two maps. Additionally, each point (Xi:j) on the perceptual map represents the jth level of the ith statement on the questionnaire's Likert scale. The horseshoe effect, which is typical of ordered data, is also visible in the perceptual maps [68]. Note that the points (red triangles) are grouped into clusters arranged sequentially along the horizontal axis, reflecting the convergent validity of the underlying construct. Furthermore, the horizontal axis's abscissa provides a reliable measure for quantifying the underlying construct along which survey respondents can be ranked. Finally, the abscissa in each dimension was normalized to the range [0,1] to derive the respondents' thematic indicators.

Subsequently, the six thematic indicators were combined linearly using PCA to obtain a global maturity indicator that encompassed all six analyzed dimensions. The biplot in Figure 3 illustrates that each arrow represents a construct (dimension) and they all point in the same direction, indicating that the thematic indicators of the six dimensions are positively correlated (with correlations ranging from 0.67 to 0.79). The first principal component, represented by the horizontal axis, accounts for 77.3% of the total variance, making

it a reliable support for the global maturity indicator. Once again, the respondents' abscissas on the first principal component were normalized to the range [0,1] to obtain a score for each respondent.

The questionnaire comprised 41 questions answered on a five-point Likert scale, with the lowest possible sum of response scores being 41 and the highest being 205. Therefore, to convert the score obtained through the proposed methodology to the sum of response scores, the following linear transformation was applied:

$$\text{Sum of Response Score} = (205 - 41)\text{x score} + 41 \quad (1)$$

The correlation between the score and the sum of the multiple Likert response items was found to be very high ($r = 0.98$), as illustrated in the scatter plot in Figure 4. Each point in the plot represents the total sum of multiple Likert response items on the x-axis and the corresponding score on the y-axis.

To establish a correspondence between the sum of the Likert response items and the scores, we applied a non-parametric regression method called LOESS, as recommended by Martinez and Martinez [69]. This approach allowed us to analyze the scatter plot and determine the relationship between the Likert responses and the corresponding scores. The resulting regression curve is also shown in Figure 4, which provides the adjusted scores corresponding to the sum of multiple Likert response items.

The adjusted scores of the 611 respondents were subjected to cluster analysis using the Ward algorithm [61] in order to group them into five clusters, each corresponding to a specific level of maturity according to the Capability Maturity Model Integration [42]. The boundaries of the clusters and the number of samples in each stratum are presented in Table 7.

The table presents a summary of the five maturity levels and their corresponding ranges of the sum of points on the Likert scale. These maturity levels provide a structured framework for organizations to assess and progress in their customer experience management maturity. The initial level ranges from 41 to 108, the managed level ranges from 109 to 128, the defined level ranges from 129 to 148, the quantitatively managed level ranges from 149 to 170, and the optimizing level ranges from 171 to 205. The defined maturity levels serve as benchmarks to measure and track an organization's progress. The results highlight that these maturity levels provide organizations with a clear and attainable path to enhance their customer experience management maturity. By progressing through these levels, organizations can improve their efficiency, effectiveness, and competitiveness in their sectors. This emphasizes the importance of continuously enhancing customer experience management practices to achieve higher levels of maturity and optimize overall business performance.

It is noteworthy that the five clusters showed a clear separation in the six thematic indicators, as illustrated by the boxplots in Figure 5, which encompassed all sectors. The proportions presented in the boxplots represent the ratio of
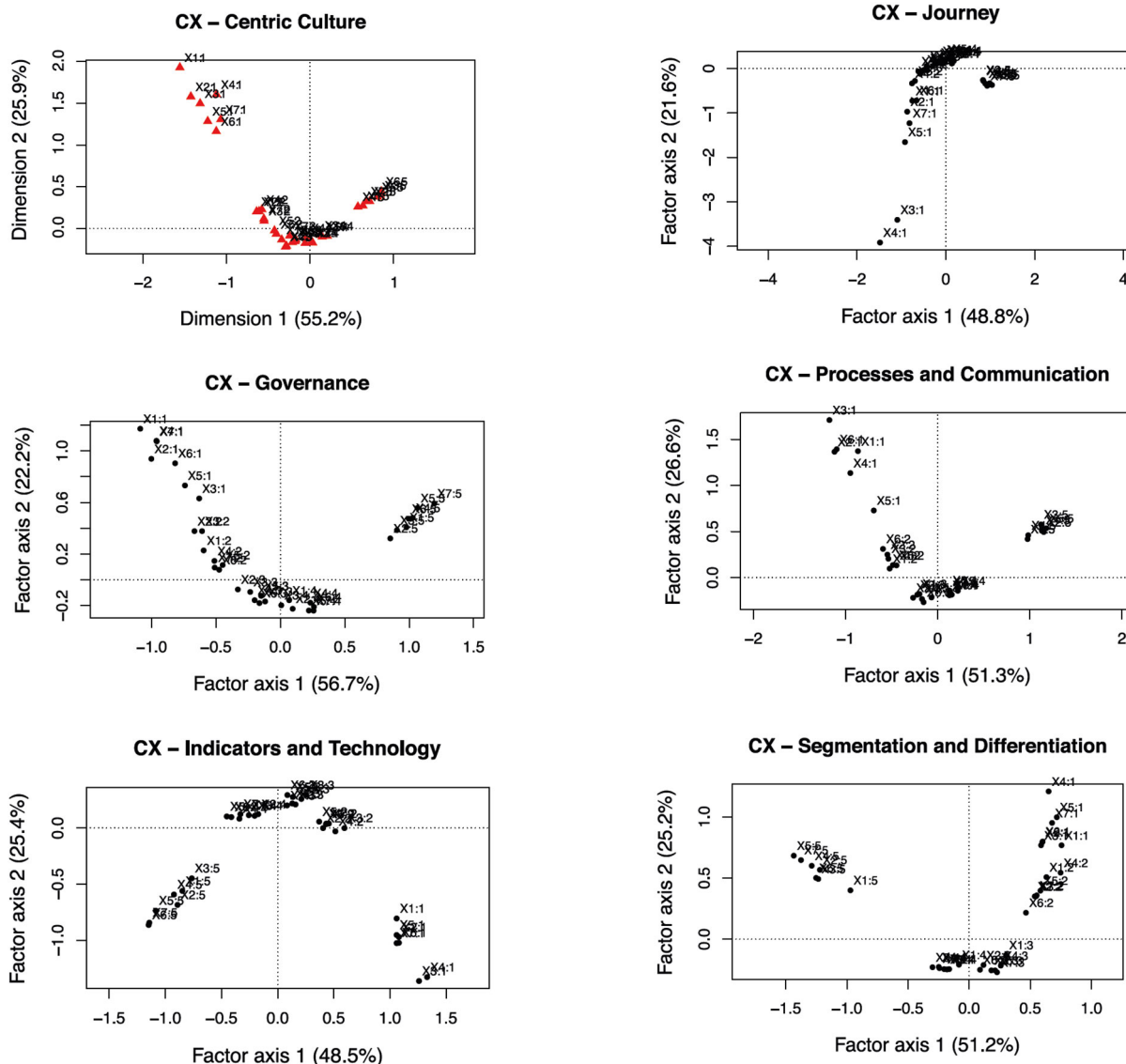
FIGURE 2. The perceptual maps generated by applying MCA to analyze the responses in each studied dimension. Each graph represents a distinct dimension.

TABLE 7. This table shows the proposed classification of the customer experience management maturity index (CXMMI) based on the maturity scale.

CLUSTER	DESCRIPTION	RANGE OF SUM OF POINTS ON LIKERT SCALE
1	Maturity level 1: Initial	$41 \leq sum \leq 108$
2	Maturity level 2: Managed	$109 \leq sum \leq 128$
3	Maturity level 3: Defined	$129 \leq sum \leq 148$
4	Maturity level 4: Quantitatively Managed	$149 \leq sum \leq 170$
5	Maturity level 5: Optimizing	$171 \leq sum \leq 205$

the total points on the Likert scale to the maximum score that can be attained in each dimension. It was observed that the medians of thematic proportions increased from maturity level 1: initial (cluster 1) to maturity level 5: optimizing (cluster 5) in all dimensions, indicating a maturity growth trend across the clusters.

The medians of the total sum of the Likert items (numerator) and the maximum score achieved in each dimension (denominator) for each cluster are presented in detail in Table 8. It is noteworthy that in all dimensions, the median scores increased from the "Initial" cluster to the "Optimizing" cluster.
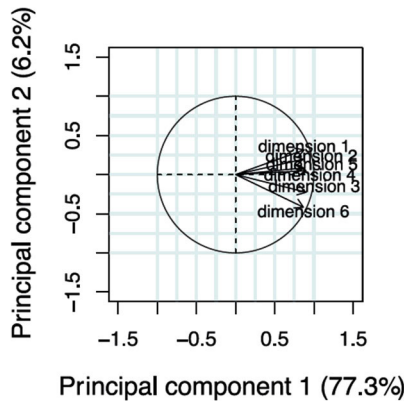
FIGURE 3. Biplot generated by PCA showing the positive correlation between the six thematic indicators (represented by arrows) and the concentration of 77.3% of the total variance in the first principal component (horizontal axis), which supports the global maturity indicator.
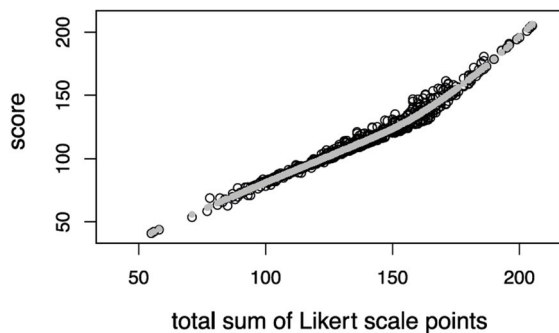
FIGURE 4. This chart presents a scatter plot with a LOESS regression curve, depicting the relationship between the sum of the Likert response items and the corresponding scores.
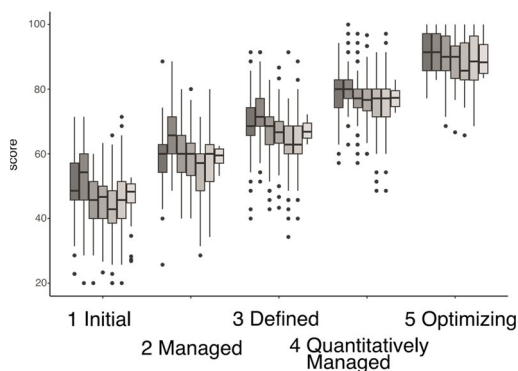

FIGURE 5. Boxplots showing the ratio of total sum of Likert items to maximum score achieved in each dimension.

Overall, the medians of the total sum of the Likert items in each cluster highlight the growth and development of customer experience management practices as organizations advance through the maturity levels. This emphasizes the importance of continuously enhancing practices in each dimension to achieve higher levels of maturity and optimize the overall customer experience.

In summary, the findings underscore the importance of progressing through the maturity levels, as organizations experience enhanced performance and effectiveness in managing customer experience. This analysis supports the notion that organizations can strive towards optimizing their customer experience management practices by systematically advancing through the defined maturity levels.

D. COMPARISON OF MATURITY LEVELS AMONG MANUFACTURING, SERVICE, AND TECHNOLOGY SECTORS

Although the mean scores for the manufacturing (139.3), service (137.3), and technology (142.8) sectors presented in Table 8 did not show significant differences (p-value of the Kruskal-Wallis test = 0.1298) [70], the homogeneity chi-square test [71] rejected the null hypothesis that the distribution of respondents across maturity levels is the same for all sectors (p = 0.0327). This result indicates that, despite the similar means, the maturity level is dependent on the sector of activity, as shown in Table 9. This can be explained by the higher participation of companies in the service sector in the initial maturity level, while the group of technology companies has a higher relative frequency of the highest maturity level (optimizing).

This distribution highlights distinct patterns in maturity levels, emphasizing the relevance of sector-specific contexts in maturity assessments. Although average maturity scores across sectors may appear similar, there is notable variation in the distribution across individual maturity levels within each sector. This indicates a nuanced perspective of maturity that is inherently industry-specific, underlining the criticality of acknowledging industry context in the evaluation of maturity levels.

V. DISCUSSION

Our analysis reveals a significant heterogeneity in customer experience measurement methodologies, highlighting the need for a more comprehensive and integrated maturity model like the CXMMI. This model addresses the gaps identified in existing literature, offering a robust framework that captures the multifaceted nature of customer experience management across different sectors. The theoretical implications of our findings suggest that a standardized maturity model not only enhances internal assessment and benchmarking capabilities but also fosters a deeper understanding of customer experience dynamics within organizations. By aligning with the Capability Maturity Model Integration principles and employing rigorous statistical techniques, the CXMMI provides a nuanced categorization of maturity levels, thereby contributing to the theoretical discourse on organizational maturity and customer experience management. When evaluating the existing customer experience management literature, we emphasize the necessity of a well-rounded maturity model. Pennington [72] acknowledges the significance of evaluating customer experience maturity but doesn't provide an intricate model. Popli and Rishi [73] suggest customer experience enhancement strategies, yet they do not detail a

TABLE 8. This table shows the medians of the total sum of the Likert items for each cluster and dimension used in the CXMMI questionnaire.

DIMENSIONS	MATURITY CLUSTER				
	INITIAL	MANAGED	DEFINED	QUANTITATIVELY MANAGED	OPTIMIZING
Segmentation and Differentiation	17/35	21/35	24/35	28/35	32/35
Process and Communication	19/35	23/35	25/35	28/35	32/35
Indicators and Technology	16/35	21/35	24/35	27/35	31.5/35
Journey	14/30	18/30	20/30	23/30	27/30
Governance	15/35	20/35	22/35	27/35	30/35
Centric Culture	16/35	21/35	22/35	27/35	31/35
Median of the total sum of the Likert items in each cluster	99/205	122/205	137/205	158.5/205	181/205

TABLE 9. Distribution and average total score by sector according to the CXMMI maturity scale.

CLUSTER	DESCRIPTION	RANGE OF SUM OF POINTS ON LIKERT SCALE	FREQUENCY DISTRIBUTION			TOTAL
			MANUFACTURING	SERVICES	TECHNOLOGY	
1	Maturity level 1: **Initial**	$41 \leq sum \leq 108$	20 (10%)	46 (17%)	13 (9%)	79
2	Maturity level 2: **Managed**	$109 \leq sum \leq 128$	53 (26%)	51 (19%)	25 (18%)	129
3	Maturity level 3: **Defined**	$129 \leq sum \leq 148$	54 (26%)	74 (28%)	47 (34%)	175
4	Maturity level 4: **Quantitatively Managed**	$149 \leq sum \leq 170$	58 (28%)	71 (27%)	33 (24%)	162
5	Maturity level 5: **Optimizing**	$171 \leq sum \leq 205$	20 (10%)	24 (9%)	22 (16%)	66
TOTAL			205 (100%)	266 (100%)	140 (100%)	611
Mean of the sum of the Likert scale points			139.3	137.3	142.8	139.3

maturity model. Burns et al. [74] sketch out a customer experience management maturity model, but details regarding its scale construction are obscured, possibly due to proprietary limitations. They organize 30 customer experience practices into six categories, aligning them with a Plan-Do-Check-Act methodology, which might oversimplify the simultaneous nature of customer experience initiatives in practice.

We observed that many consultancies do not openly disclose detailed information about their customer experience maturity index methodologies. Moreover, our investigation revealed significant heterogeneity in this field. For example, the "Customer Experience Maturity: Assessment" [62] and "Customer Experience Maturity Assessment" [63] both include 20 questions but differ in dimensions and maturity scales. Gartner's model [75] and another "Customer Experience Management Maturity Model" [76] offer detailed maturity scales from "Initial" to "Optimized" but lack specifics on question count. This variation in model construction, including differences in dimensions, question numbers, and maturity scales, combined with the general lack of data accessibility, highlights the need for more standardized and transparent maturity models in the industry. As shown in Table 3, our analysis of consultancy maturity models revealed gaps that CXMMI seeks to fill, offering a more robust and adaptable framework for different organizational contexts. This implies the ability of CXMMI to adapt to the specific needs of different sectors and companies, thereby filling a critical gap in the customer experience management literature and practice.

We find significant diversity in customer experience measurement approaches. Table 3 focuses on the analysis of customer experience maturity models developed by consulting firms, aiming to assess the maturity of customer experience management within organizations, with specific scales and presented maturity questions. However, the limited availability of respondent databases for researchers may restrict their accessibility for comprehensive analyses. In contrast, Table 1 compiles academic research exploring customer experience measurement across various contexts. While these studies provide valuable insights into the customer experience, the absence of specific maturity models limits the assessment of customer experience management maturity within businesses, and the maturity scales vary widely. This comparison reveals that both approaches have advantages and limitations. Customer experience maturity models offer robust frameworks for internal assessment, while academic research provides a broad view of customer experience.

Our comprehensive analysis of both academic and non-academic sources culminates in the creation of the Customer Experience Management Maturity Index (CXMMI), which addresses these gaps with a thorough characterization of an organization's customer experience management stages across six distinct dimensions: CX-Journey, CX-Centric Culture, CX-Governance, CX-Processes and Communication,

CX-Indicators and Technology, and CX-Segmentation and Differentiation.

The findings of the Customer Experience Management Maturity Index highlight the diverse stages of maturity among the surveyed companies. When considering different economic sectors, it is evident that the technology sector shows a slightly higher level of customer experience management maturity, followed by the manufacturing and services sectors. These insights emphasize the need for organizations across sectors to continuously strive for improved customer experience management practices and maturity to stay competitive in today's dynamic business landscape.

The index has the potential to be embraced by researchers. De Keyser et al. [77] suggest that managers who are aware of the crucial role of customer experience will be better equipped to create offerings that drive firm performance. Customer experience encompasses interactions with different stakeholders, resources, and institutions, extending beyond the traditional dimension of experience as a response by the consumer [78].

The Customer Experience Management Maturity Index can facilitate the evaluation and evolution of customer experience management practices within companies. As noted by Becker and Jaakkola [53, p.630], ''customer experience is a crucial marketing concept, but the growing number of studies in this area has led to significant fragmentation and theoretical confusion.'' Nevertheless, there is a growing need to measure customer experience not only from the consumer's perspective, but also by measuring essential KPIs such as NPS and CSAT. Establishing mechanisms to measure how businesses deliver experiences to customers can help companies manage customer interactions effectively at every touchpoint interaction [26].

Customer experience research from an organizational perspective aims to identify effective strategies for designing and managing customer interactions and underlying processes to achieve organizational goals efficiently [8], [80]. Additionally, studies have explored the influence of the store environment and employee behavior towards customers on customer experience [8], [81]. However, while there are existing indices and scales that focus on measuring customer experience from the consumer's perspective and utilize established performance indicators or specific indices, the measurement of customer experience management from the company's perspective is often overlooked.

This raises the question of whether companies are actively conducting daily and real-time measurements of the customer experience to understand their behavior across contact channels. The need for new metrics to assess customer experience management is recognized by scholars, and companies also acknowledge their deficiency in consistently measuring this practice. In this context, the Customer Experience Management Maturity Index offers a viable option for both academia and businesses.

Beyond its application across various industries, customer experience management is also applicable to different business contexts. Moreover, the multifaceted nature of customer experience has garnered significant interest across academic and practical domains, notably for its versatile applications in Business-to-Business (B2B), Business-to-Consumer (B2C), and Business-to-Business-to-Consumer (B2B2C) contexts. Chiappa and Gallarza [82] succinctly encapsulate this breadth by stating, 'experiences are everywhere, and everything is an experience,' highlighting CX's ubiquitous and integral role in various sectors. Zolkiewski et al. [83] further underscore the extensive attention CX has received in both private and public sectors, bridging the traditional divides between B2B and B2C markets. Focusing on B2B, Lemke et al. [84] introduced a customer experience quality model, emphasizing its critical application in both B2B and B2C contexts. In contrast, Pei et al. [85] developed customer experience models tailored for B2C E-Commerce enterprises, demonstrating the adaptability of CX concepts. Complementing this, G. and Asokan-Ajitha [86] anticipate an increasing prominence of B2B relationships, shedding light on emerging trends in the B2B2C experience domain. These diverse studies illustrate the expansive and evolving landscape of customer experience, underscoring its pivotal role in shaping business strategies and customer interactions across various platforms.

Based on the analysis, it is evident that the CXMMI developed in 2023 offers several improvements compared to the IFCX from 2018 [38], as presented in detail in Table 10.

Both indices share the same number of dimensions (6) and assess customer experience management across multiple aspects. However, the Customer Experience Management Maturity Index introduces an additional scale class, resulting in a more refined categorization of maturity levels (5 levels) compared to the IFCX (4 levels). The method of defining the scale classes in the index relies on statistical analysis, allowing for a data-driven approach to establish interval ranges, while the IFCX uses pre-defined intervals. The maturity stage classification in the proposed model aligns with the capability maturity model integration and is derived from statistical analysis of the IFCX. In contrast, the IFCX maturity stage classification is based on research practices in companies. Lastly, the CXMMI's name explicitly highlights its focus on customer experience management, while the IFCX's name emphasizes customer experience focus.

Overall, the proposed index demonstrates advancements in scale development, statistical analysis, and alignment with industry standards, making it a valuable tool for assessing and enhancing customer experience management practices. This evolution from IFCX to CXMMI reflects a commitment to adaptability and thoroughness in assessing and improving customer experience management practices in diverse organizational contexts.

Additionally, the CXMMI acronym, suggested by the researchers, has the advantage of being memorable to people, which can bring advantages not only for academia but also

TABLE 10. This table presents a comparison between the Index of Customer Focus Experience (IFCX) of 2018 and the Customer Experience Management Maturity Index (CXMMI) of 2023.

ITEM	IFCX 2018	CXMMI 2023
Number of statements	42	41
Number of dimensions	6	6
Number of scale classes	4	5
Method of defining the scale classes	Pre-defined intervals	Intervals based on statistical analysis
Maturity stage classification	Absent, undefined, targeted and intensive	Initial, managed, defined, quantitatively managed, optimizing
Origin of maturity stage classification	Research practices in companies	Capability maturity model integration and statistical analysis
Maturity scale name	Customer Experience Focus Index - IFCX	Customer Experience Management Maturity Index - CXMMI

for businesses. Its memorability can facilitate the understanding and adoption of the measurement tool, making it more accessible and widely recognized. The CXMMI acronym effectively highlights the objective of the method, emphasizing the focus on evaluating and improving the maturity of customer experience management practices. This clarity of purpose can further enhance its usability and effectiveness in driving customer experience management improvements within organizations.

VI. CONCLUSION

Our study makes a valuable contribution to the literature by highlighting the importance of developing new metrics to assess customer experience management in organizations. As the interest in customer experience management continues to grow among academia and companies, there is a pressing need for comprehensive measurement tools. Business maturity models, regardless of the specific domain they focus on, are becoming increasingly relevant in this context. These models allow organizations to understand their current stage of transformation implementation and identify areas for improvement.

The findings obtained, particularly the detailed comparison of customer experience measurement approaches proposed in academic articles, specialized books, and consultancy models, established a crucial foundation for the next phase of statistical validation of the chosen model. This careful decision in model selection was guided by a pursuit of robustness and relevance, aimed at advancing our understanding and enhancement of customer experience management maturity indices. This evidence-based process lays a solid groundwork for the CXMMI to significantly contribute to refining customer experience management studies and practices in businesses, including the development of more precise and applicable maturity indicators. With the adoption of the CXMMI, companies can introspectively identify gaps in creating memorable experiences for their customers and also compare their index with other businesses in the market.

The CXMMI's data-driven approach and its more detailed maturity classification system offer organizations a practical means to evaluate and enhance their customer experience practices, reflecting the dynamic nature of customer experience in today's market. The CXMMI introduces an additional scale class, resulting in a more refined categorization of maturity levels. The method of defining the scale classes in the Index is based on statistical analysis, allowing for a data-driven approach. In contrast, the IFCX uses pre-defined intervals. Furthermore, the CXMMI's maturity stage classification aligns with the Capability Maturity Model Integration, providing a standardized and industry-recognized framework. The CXMMI's name also highlights its focus on customer experience management, distinguishing it from the IFCX.

The development of the maturity scale in our study involved the utilization of several statistical techniques, including Multiple Correspondence Analysis (MCA), Principal Component Analysis (PCA), Locally Estimated Scatterplot Smoothing (LOESS), and Clustering Analysis. These techniques played a crucial role in analyzing the responses of over 600 participants to the 41 statements. The use of these statistical methods provides robust evidence of the internal consistency and reliability of our research. Furthermore, the active participation of the market in this investigation underscores the significance and relevance of studying customer experience management and its maturity in organizational settings.

By developing the CXMMI on a scale consisting of five intervals based on our statistical analysis, our intention is to provide insight into how organizations are approaching the important theme of customer experience management, which is highly valued today. This will allow companies to compare themselves with one another, identify gaps, and compare their performance with other sectors. Additionally, our proposal of a customer experience management maturity scale, which is based on research and statistical analysis, demonstrates the potential of the Index in the manufacturing, services, and technology sectors.

According to De Keyser et al. [87], new nomenclatures can help companies and researchers better understand and reduce misunderstandings about customer experience management.

The TCQ (Touchpoints, Context, Qualities) framework, for instance, helps link the building blocks and customer experience components in a way that has not been done before [87]. As emphasized by the authors, the introduction of new nomenclatures is crucial for a deeper understanding and reducing misconceptions in customer experience management.

The CXMMI is a strategic tool that facilitates employee collaboration by simplifying communication about customer experience management maturity indicators. It encompasses key dimensions including CX-Journey, CX-Centric Culture, CX-Governance, CX-Processes and Communication, CX-Indicators and Technology, and CX-Segmentation and Differentiation. This framework not only aids in internal measurement and management but also assists companies in comparing maturity levels, thereby improving customer-focused practices.

Therefore, we recommend that companies and academia consider adopting the Customer Experience Management Maturity Index (CXMMI) acronym, which can facilitate employee collaboration and serve as a prominent indicator for long-term measurement. This approach ensures that organizational customers can reap the benefits of collective efforts by employees in creating memorable experiences.

In conclusion, this study significantly contributes to academic literature and corporate practices by bridging the gap in existing research and offering a holistic framework for evaluating and enhancing customer experience management.

VII. MANAGERIAL IMPLICATIONS

The proposed index introduces a fresh approach to assess customer experience management maturity and offers companies a comprehensive tool to enhance their performance. Measuring customer experience management through employees is also a way to value the perception of people who deal directly with customers regarding the practices adopted by the company, contributing to the increase of the customer-oriented culture. Furthermore, the new terminology "CXMMI" aids companies and employees to comprehend this new metric effortlessly, benchmark their scores against other players in the market, and enhance their customer experience strategies.

In terms of managerial practices, our study highly recommends the adoption and utilization of the Customer Experience Management Maturity Index, as demonstrated in the framework of Figure 6.

The initial step focuses on raising employee awareness and encouraging participation in the survey to foster a customer-centric culture. Next, data is collected via a confidential electronic questionnaire. The company then evaluates its maturity level using the questionnaire's five-point scale, enabling benchmarking and identification of strengths and areas for improvement. Leaders analyze the results to pinpoint gaps and develop strategies for enhancement. For continuous improvement, the Index should be administered every six months to track progress and build a historical maturity index.
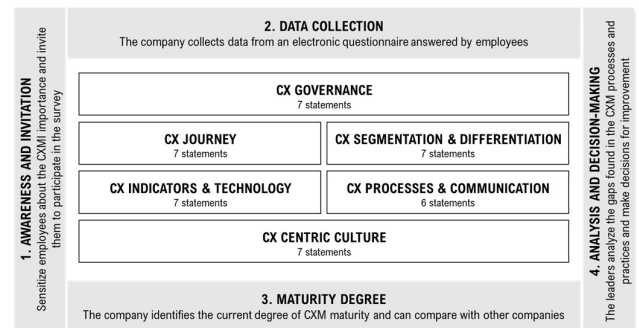

FIGURE 6. CXMMI Framework - a suggested approach for leaders to assess the maturity of customer experience management practices from the perspective of employees.

By following this approach, companies can leverage the CXMMI maturity index to benchmark themselves against other market players, identify areas for improvement, and make strategic decisions to enhance their customer experience management practices. This framework enables organizations to cultivate a customer-centric culture and drive sustainable business success.

VIII. LIMITATION AND SUGGESTED RESEARCH AGENDA

First, it is recommended to examine and potentially adapt the statements used in the CXMMI questionnaire to ensure their relevance and applicability in different contexts. This would enhance the accuracy and effectiveness of the maturity assessment. Additionally, exploring additional statistical methods for validating the Customer Experience Management Maturity Index (CXMMI) could provide valuable insights.

Furthermore, it is highly encouraged to replicate the application of the 41 statements across the six dimensions of the Index in other countries and compare the results with those obtained in Brazil. This cross-cultural analysis would provide valuable insights into the similarities and differences in customer experience management practices across different cultural and market contexts. Additionally, exploring other markets, economic segments, and companies at various stages of development would contribute to a more comprehensive understanding of customer experience management maturity. This could involve studying different industries, sizes of organizations, and geographical locations to capture a diverse range of perspectives and experiences.

Managers are also encouraged to apply the CXMMI to different departments within their organizations and compare employee perceptions across the entire company. This intra-organizational analysis can uncover valuable insights into variations in customer experience management maturity and identify areas for targeted improvement. Future research in the field of customer experience and organizational structure can focus on several key areas. Firstly, studying the evolution of organizational structures in relation to customer experience management practices is crucial. Research can investigate how organizations transition from traditional

hierarchical structures to more agile and customer-centric structures to enhance customer experience management delivery. Understanding the drivers, challenges, and outcomes of such organizational transformations can provide valuable insights for practitioners.

Future research should aim to conduct a more comprehensive literature review, incorporating key studies on relationship marketing, customer orientation, CRM, and customer engagement. By pursuing these suggested research directions, scholars and practitioners can further advance their understanding of customer experience management, refine the CXMMI framework, and contribute to the continuous improvement of customer experience management practices in organizations worldwide.

DECLARATION OF CONFLICTING INTERESTS

The authors declare no potential conflicts of interest with respect to the research, authorship, or publication of this article.

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