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Role of Artificial Intelligence in Amplifying Customer Engagement: A Structured Literature Review (2002-2022)

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ABSTRACT

Artificial Intelligence (AI) technologies based on Natural Language Processing (NLP), Machine Learning, and Computer Vision, to name a few, are being rampantly deployed across all strategic pillars of Omnichannel Marketing Strategy including Customer engagement and Customer Relationship Management. It is an overpowering case to understand and delve deeper into the symbiotic relationship between a marketer and the evolving role of AI in engaging customers. This paper aims to examine the role of Artificial Intelligence in Customer engagement using scientometric analysis for Scopus-indexed articles for 2 decades and identify major future research directions. The author has used the Bibliometrix package of R-Studio and VOS Viewer to analyze 328 unique articles on AI and Customer engagement for the period 2002 to 2022. As per the author's knowledge, this will be the first bibliometric study on the impact of Artificial Intelligence in Customer Engagement which will be catering to business and management domains. Keyword analysis shows that AI, Chatbots, Customer experience, and customer satisfaction are the most relevant keywords in the research domain of AI and Customer Engagement. Further, the results highlight source analysis, Bibliographic coupling of Journal Analysis, Author and document citation analysis, and thematic maps elucidating emerging themes and motor themes in this area. Researchers and marketing practitioners can use the comprehensive findings of this paper to expand their understanding in the realm of AI and Customer Engagement and can be used as a reference point to advance translational research.

Keywords: *AI, Artificial Intelligence, Customer Engagement, Customer Experience, Biblioshiny, VoS Viewer, Customer Loyalty, Service Marketing*

INTRODUCTION

As defined by McCarthy, Minsky, Rochester, and Shannon (1955), artificial intelligence (AI) is the capacity of machines to do activities normally requiring human intelligence. Although marketers in this field frequently focus on how people respond to artificial intelligence and how it is deployed, the ramifications of the fourth industrial revolution might be far-reaching (Syam & Sharma, 2018). That "every aspect of learning or any other feature of intelligence can, in principle, be described so

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precisely that a machine can be made to simulate it" (McCarthy et al., 1955, p. 1) is central to the field of artificial intelligence. According to research conducted by Huang and Rust in 2018, AI may be broken down into four distinct types: social robots, propensity modeling, content generation, and mechanical or automation.

Recent years have seen a rise in both theoretical and applied interest in the idea of customer engagement (CE) in service organizations, as shown by works like Brodie et al. (2011) and Kumar et al. (2019). CE is considered as fundamental to a company's success since engaged customers are more likely to back product innovation, spread the word about the firm, and be loyal to the brand (Hollebeek et al., 2016; Kumar et al., 2019).

More and more individuals are evaluating the quality of research in many fields using bibliometric criteria. Previous studies have used bibliometrics to give a broad overview of the research field, including analyses of top researchers, nations, and institutions (Podsakoff et al., 2012; Landstrom et al., 2012; Fagerberg et al., 2012); management (Merigó and Yang, 2015); entrepreneurship (Landstrom et al., 2015); and accounting (Merigó and Yang, 2015). Although bibliometric approaches are primarily concerned with statistics, they may also result in emotional understanding. When it comes to assessing a large number of articles, bibliometric approaches are simpler to utilize than peer review. To identify current and emerging patterns that are critical to the development of the subject, the authors of this research used bibliometric analysis to examine papers on CE.

Therefore, this study's major objective is to provide answers to the following questions:

Q1. Where is CE research taking place right now?

What potential research topics haven't been considered yet and may be recommended for this field's future study?

"A customer's [...] voluntary investment of focal operant resources (such as cognitive, emotional, behavioral, and social knowledge/skills) and operand resources (such as equipment) in brand interactions," Kumar et al. write in their literature review and rationale for the study (2019, p. 141). To paraphrase Brodie et al. (2011), page 260: "CE is a psychological state that results from interactive, co-creative customer experiences with a focal agent." Value co-creation in service encounters is a fluid, iterative process. A nomological network that controls service interactions is centered on CE. Participation and loyalty are two more social concepts that are repeated CE processes' causes or impacts. It is a complex notion with several components that may

be represented in a variety of ways based on the circumstances and/or the parties involved.

"The level of a customer's motivational, brand-related, and context-dependent state of mind, marked by specific levels of cognitive, emotional, and behavioral activity in brands," according to Hollebeek (2011, p. 785). According to a study by van Doorn et al. (2010), how a company interacts with its customers can have positive or negative effects on the company, the environment, and the people involved. Due to this, companies must influence their clients' behavior. This is so because, as Pansari and Kumar (2017) note, a company's marketing activities are successful when they result in increased consumer involvement. Engagement among customers has been associated with positive outcomes for the business. Van Doorn et al.'s CE behaviors (2010, p. 254) are "a customer's behavior that has a brand or firm focus, goes beyond a purchase, and is caused by motivational drivers."

By examining the connections between customer contact and new technology, specialists have recently widened the scope of their research of CE. Jessen et al. (2020) examined the relationship between CE and augmented reality, while Hollebeek et al. (2021) examined the relationship between CE and autonomous service exchanges and artificial intelligence.

Recent research has shown how crucial it is that social media marketing strategies align with the concept of consumer participation. Li, Larimo, and Leonidou (2020) discuss this shift in practice in their work. Businesses that wish to utilize social media strategically, according to academics, "should take deliberate initiatives to motivate and empower customers to maximize their engagement value and yield superior marketing results" (Li et al., 2020, p. 4).

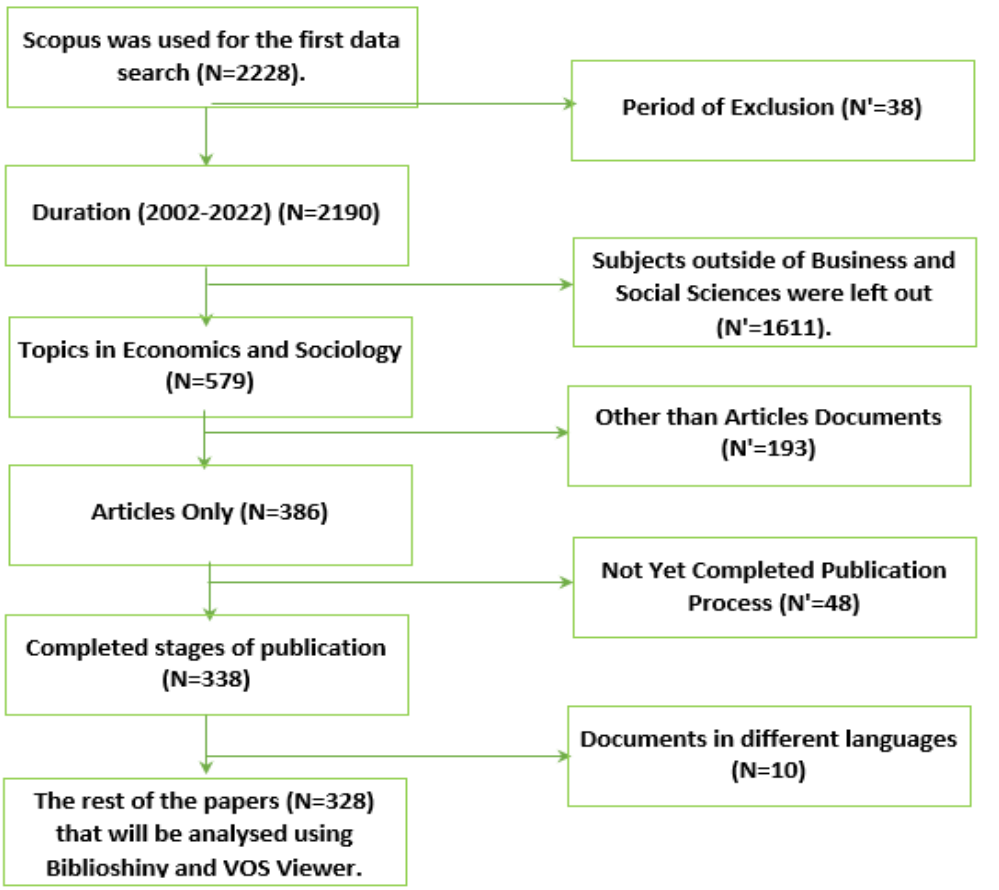
Based on the findings we've discussed so far, the authors were able to determine the most crucial areas for bibliometric analysis of research on AI and CE in the business and social sciences using the Biblioshiny and VoSviewer software packages. In order to identify areas that can benefit from more research, this study will examine current trends in the industry. This publication should help researchers understand current trends in AI and CE research and identify potential areas for further investigation. The study methodology will be thoroughly detailed in the text's next section.

METHODOLOGY

The authors utilized the PRISMA methodology to collect data in an organized manner using selection criteria spanning the years 2002 to 2022 as shown in Figure 1. For the

subsequent phases, only documents pertaining to business, management, and the social sciences were maintained. Additionally excluded were pieces that weren't published or that were written in a language other than English. 328 records were located under the restrictions, and a bibliometric analysis of the articles was also carried out to satisfy the objectives of the present research project and determine the potential directions for future research.

Figure. 1. Prisma Model



DOCUMENT ANALYSIS

Table 1 provides a thorough overview of 328 papers chosen for examination and published in 184 publications. Each publication had an average of 21.77 citations, and there were on average 3 writers working together on each piece in this specific field of study. More research is desperately needed in this field, as seen by the yearly growth

rate of 24.14% in the number of publications produced on this topic. A high degree of author cooperation is evident from the fact that 87% of all documents are multi-authored.

The year 2022 saw the publication of the most publications (98), a sign of the researchers' increased interest in this field, especially after COVID-19. The ability to anticipate consumer needs and adapt business tactics as a result gives CRM experts, product managers, and marketers a distinct competitive edge.

Table 1: Document Analysis			
Description	**Results**	**Year**	**Articles**
Timespan	2002:2022	2002	2
Sources (Journals, Books, etc)	184	2004	1
Documents	328	2005	3
Average citations per document	21.77	2006	1
Average citations per year per doc	6.67	2008	5
References	19912	2009	2
Keywords Plus (ID)	1133	2010	5
Author's Keywords (DE)	1179	2011	2
Authors	901	2012	3
Authors of single-authored documents	44	2013	5
Authors of multi-authored documents	857	2014	1
Single-authored documents	44	2015	3
Documents per Author	0.364	2016	3
Authors per Document	2.75	2017	7
Co-Authors per Documents	3	2018	11
Collaboration Index	3.02	2019	32
		2020	55
		2021	89
		2022	98
The annual growth rate of articles is 24.14%			

Most Prolific Authors

Prentice C ranked first with 5 articles, while MouJ followed with 4 publications as shown in Table 2. It is interesting to note that Brandtzaeg Pb and the following 12 authors had 3 publications each.

Table. 2: Most Prolific Authors		
Authors	**Articles**	**Articles Fractionalized**
Prentice C	5	2.17
Mou J	4	0.90
Brandtzaeg Pb	3	0.83
Cheng X	3	0.70
Choy Kl	3	0.75
Følstad A	3	0.83
Gupta S	3	0.95
Ho Gts	3	0.75
Kim H	3	1.00
Shin D	3	0.83

Most productive organizations

As can be shown in Table 3, the top three productive affiliations in the field of artificial intelligence and consumer interaction are the Hong Kong Polytechnic University, the Queensland University of Technology, and the Hong Kong Polytechnic University.

Table 3. Most Relevant Affiliations	
Affiliation	**Articles**
Hong Kong Polytechnic University	14
Queensland University Of Technology	10
The Hong Kong Polytechnic University	10
University Of Technology Sydney	9
Université Du Québec À Montréal	9
Hainan University	8
Notreported	8
Swinburne University Of Technology	8
Griffith University	7
Imperial College London	7

Source Analysis

Table 4 lists the top 10 AI and Customer Engagement periodicals that routinely publish impactful papers. Source analysis may assist researchers locate journals that publish research in a certain field, according to Park (2017). This helps them organize their suggestions. Academics may decide where to submit their work by checking at journal

frequency and content. This strategy is utilized in bibliometric research to locate high-impact publications (Bornmann & Daniel, 2008).

Each journal provided 9.4 percent, for a total of 28.2 percent, although the largest contributor was Journal of Business Research (9.4 percent). There are eleven publications on artificial intelligence and consumer interaction in these journals dating back 20 years.

AI and customer interaction sources have written on policy, business procedures, service innovation, and data. Due to the paradigm shift, the authors believe AI and customer engagement-based research should be expanded to address a wide variety of challenges in other industries. Researchers may examine their study on automating customer engagement, real-time marketing, emotional intelligence, and CRM's practicality.

Table 4.: Top ten sources in the domain	
Journal Name	**No. of Publications**
Journal Of Business Researches	*11*
Journal Of Retailing & Consumer Services	*11*
Sustainability (Switzerland)	*11*
International Journal Of Production Researches	*8*
International Journal Of Bank Marketing	*7*
Applied Marketing Analytics	*6*
Decision Supports Systems	*6*
Journal Of Services Management	*6*
Journal Of Services Researches	*6*
Electronic Markets	*5*

Bibliographic Coupling

Figure 1 Bibliographic coupling analysis was first proposed in the 1963 research paper "Bibliographic coupling between scientific papers" by M.M. Kessler. This method uses the frequency with which two documents are cited together in other publications as a proxy for their level of relatedness. Since then, researchers have used this method to analyze the significance of articles and determine the connections between texts.

Kessler's study paved the way for the emerging subject of bibliometrics, which is concerned with the statistical evaluation of academic and scientific publications.

Based on the authors' common references, Figure 2 depicts the relationships between various sources (journals) as determined by bibliographic coupling analysis (Liu and Li, 2015). This technique enables scholars to identify the sources that are most closely related to a certain topic by examining the bibliometric relationships between them. Research on bibliographic coupling identifies the relationships between periodicals that authors often quote one another. The visualization in Figure 4 supports what has been said about consumer interaction and AI in many journals. According to Li and Ding (2011), the size of a circle in the picture indicates how relevant and significant a certain magazine is to a field. The publication is more significant and influential in the subject area the larger the circle.

Figure 2. Bibliography coupling of journal (source) analysis

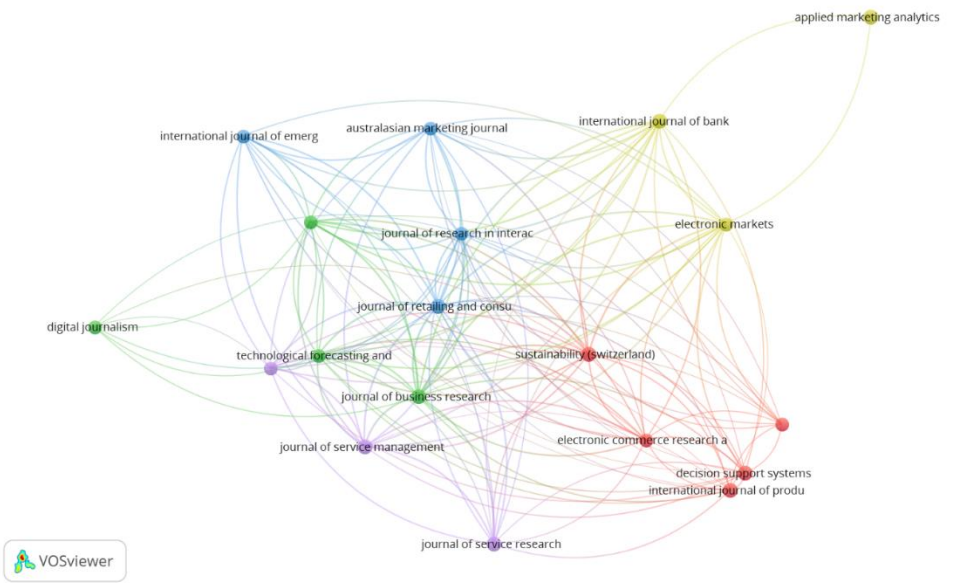


Table 5 adds to what was discussed concerning paper grouping. Common subjects emerged from the way the journals in Figure 2 referenced the same sources. Decision Support, Service Management, Behavior-based, Business Research, and Marketing Analytics were chosen based on how frequently the same things were published about AI and customer interactions in the same publications.

Table 5. Bibliographic coupling of the sources		
No.	**Clusters**	**Journals**
1	Decision Support based themes (Redcolor)	*Knowledge-Based Systems, Sustainability (Switzerland), International Journal of Production Research, Electronic Commerce Research and Applications, Decision Support Systems, and the International Journal of Production Research.*
2	Service Management Based themes (Purplecolor)	*Publishing in the Journals of Service Management, Service Research, and Services Marketing*
3	Behaviour based themes (BlueColor)	*Journal of Retailing and Consumer Services; Journal of Research in Interactive Marketing; Journal of Retailing; Australasian Marketing Journal; International Journal of Emerging Markets*
4	Business Research based themes (GreenColor)	*Journal of Electronic Publishing, Business Research, Journal of Psychology and Marketing, Technological Prediction and Social Change, and Journal of Business Research*
5	Marketing Analytics based themes (YellowColor)	*Journal of Bank Marketing, Electronic Markets, and Applied Analytics in Marketing*

Author and document citation analysis

This section focuses mostly on the examination of author and document mentions, which is an essential component of bibliometric analysis. Citations are references to written works, whether public or private, that discuss the contributions of other writers. The number of citations a piece of academic writing receives is often used to evaluate it (Cavalcante et al., 2021; Bornmann & Daniel, 2008).

The top 10 articles read worldwide are shown in Table 6. Huang M.-H.'s article "Artificial Intelligence in Service" plus Rust R.T. (2018) has received 719 citations worldwide. The author examines the four categories of intelligence—mechanical, analytical, intuitive, and empathetic—that are being developed to make AI effective in service. In this stage-by-stage process, jobs that are mechanical, logical, and natural will be replaced. Since it's challenging for computers to replicate emotional intelligence and empathy, people with these skills will be in high demand. The author

believes that AI will replace jobs in a way that depends on how important each job is in terms of intelligence.

The article "Building Dynamic Capabilities for Digital Transformation: An Ongoing Process of Strategic Renewal" was the second most referenced with 387 total references. Wager, M., & Warner, K.S.R. (2019) investigated how traditional firms build flexible capacities for digital transformation by using emerging digital technologies to enrich customer experiences, simplify operations, and create novel business models. The authors argue that there is a lack of study on the implications of using the term "digital transformation" in different circumstances. The nine microfoundations of the process model were derived through interviews with senior executives. This shown that adaptability is crucial to the ongoing process of renewing the business model, collaboration strategy, and company culture of an organisation. Kiss C. Bichler M. (2008) examined using 282 linkages how the significance of consumers might be leveraged to identify industry leaders and spread the word via focused social media marketing initiatives. Dale R. (2016) cited 213 sources to describe the condition of bots and voice-activated digital assistants, which are not simply restricted to talking technology, including Amazon's Alexa, Apple's Siri, and the Google Assistant. Bots may be designed to do certain tasks, such ordering pizza, making online purchases, and booking tickets. There were 211 mentions of the work by Luo X. et al. The author examines the effectiveness of people and robots in their occupations by calling clients to make sales. Chatbots were found to be more productive and efficient than untrained personnel, however, purchase rates and call duration significantly decreased after the bots' actual identities were made public. This shows that users believe bots to be less intelligent and compassionate than people. This research may assist developers of AI chatbots create strategies on how to target customers and encourage them to engage with their bots.

Then comes Huang M.-H. and Rust R.T. (2021) which provides a framework for a plan for the use of AI in service to connect consumers and has 157 citations. The author examines how Mechanical AI may be used to perform regular, repetitive, and transactional duties that are often a component of back-end operations and service offerings. The framework goes from Mechanical AI to Thinking AI to Feeling AI in order of how well it works. Thinking AI should be utilized for tasks that need the capacity to infer and evaluate, like reworking existing ones or launching brand-new ones. I think it's important to use AI for customer care and engagement when consumers may benefit much from personal attention, and when service jobs need more conversation and contact.

According to Sergi BS and Popkova EG. According to the study's findings, social companies may gain from Industry 4.0, but they won't use as much technology as for-profit ones. Identify the role of human interaction and AI in social business (human intelligent decision support) by the year 2020.

Table 6. Most cited Documents and Authors

Authors	*Title*	*Source Title*	*Citations*
Huang M.-H. and Rust R.T. (2018)	*Artificial Intelligence in Services*	*Journal of Service Research*	*719*
Warner K.S.R. and Wäger M. (2019)	*Buildings dynamic capabilities for digital transformations: An ongoing process of strategic renewal*	*Long Range Plannings*	*387*
Kiss C. and Bichler M. (2008)	*Identifications of influencers - Measuring influences in customers' network*	*Decision Supports Systems*	*282*
Dale R.(2016)	*The return of the chatbots*	*Natural Language Engineering*	*213*
Luo X. et al. (2019)	*Frontiers: Machines vs. humans: The impacts of artificial intelligence chatbot disclosure on customers purchases*	*Marketing Science*	*211*
Popkova E.G. and Sergi B.S. (2020)	*Human capitals and AI in Industries 4.0. Convergence and divergences in social entrepreneurship Russia*	*Journal of Intellectual Capital*	*178*
Huang M.-H. and Rust R.T. (2021)	*Engaged to a Robot The Role of AI Services*	*Journal of Service Research*	*157*
Mounce S.R. et al. (2010)	*Developments and verifications of an online artificial intelligence system for the detection of bursts and other abnormal flow*	*Journal of Water Resources Planning and Management*	*157*
Androutsopoulou A. et al. (2019)	*Transforming the communications between citizens and governments through Artificial Intelligence guid chatbots*	*Government Information Quarterly*	*150*
Hoyer W.D. et al. (2020)	*Transforming Customer Experience Through New Technologies*	*Journal of Interactive Marketings*	*138*

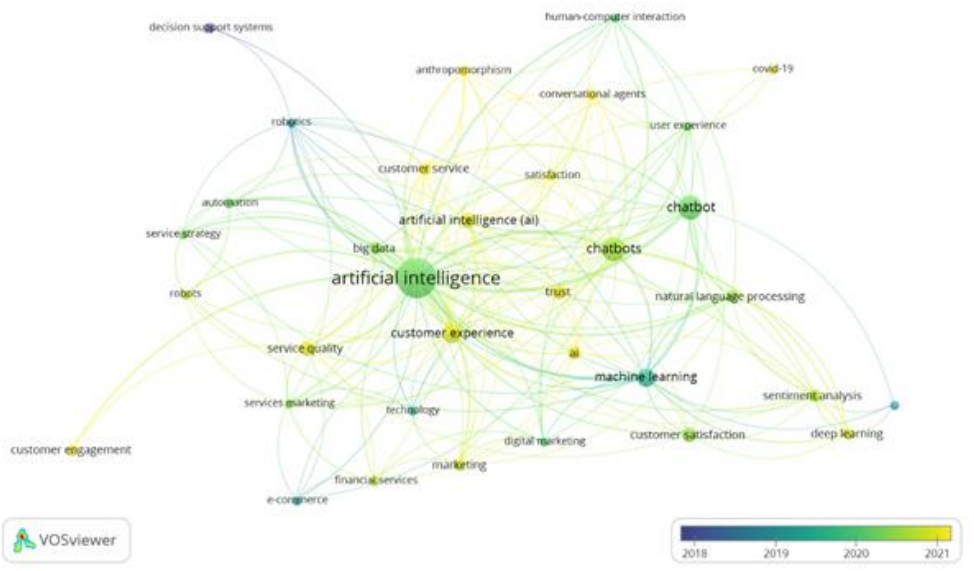
Keyword Analysis

This section of the paper examined prior researchers' search keywords. Overlay visualization output was used to identify the researchers' previous year's research interests as depicted in Figure 3. This research referenced Scott and Lane (2000) and Sidorova et al (2008).

Figure 5 visualizes the most frequent author keyword used to discover shared research interests. The circle's radius shows the term's significance and frequency, while the connecting lines indicate where the author has used other keywords. 34 of 1149 keywords found by VOS Viewer had at least five occurrences, the minimum threshold. This analysis found that AI, chatbots, customer experience, and customer satisfaction are the most important keywords for AI and customer engagement. Technology, Machine Learning, and Digital Marketing are all connected to "customer experience," whereas "service quality" and "artificial intelligence" are related to "trust" and "engagement," respectively.

"E-commerce technology" and "robotics" were highlighted in 2018. 2019's biggest trends were machine learning and e-commerce. Big data, automation, and artificial intelligence were growing issues in 2020. Anthropomorphism, chatbots, conversational agents, and artificial intelligence dominated research in 2021.

Figure. 3. Network visualization of authors' keywords using VOS viewer



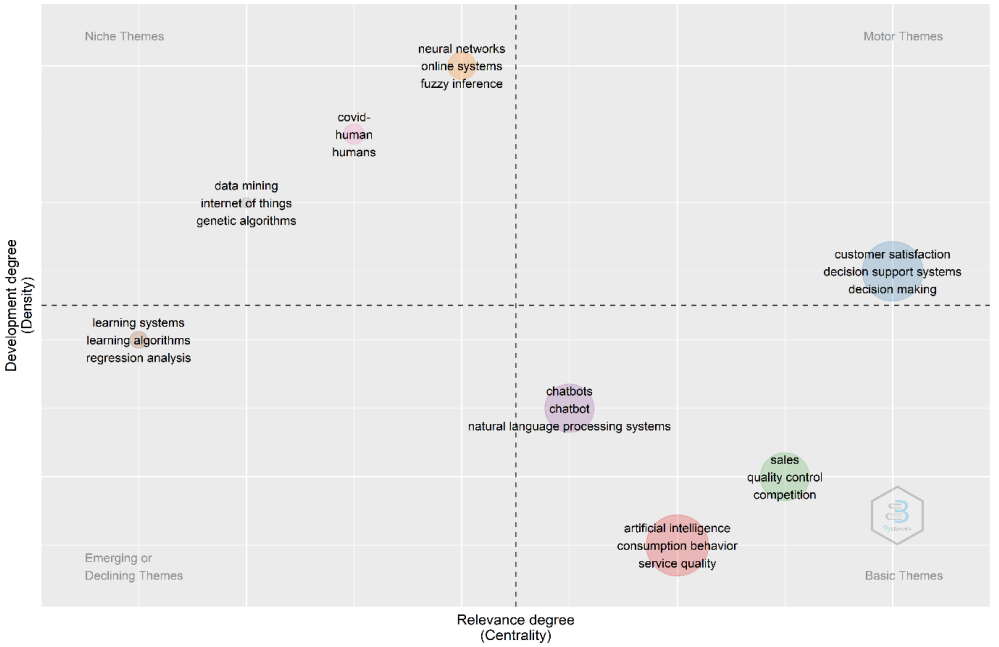
Thematic Map Analysis

For the years 2002 through 2022, the Biblioshiny package of R Studio is used to generate thematic maps that showcase the emergence of different types of topics. In the Keyword Plus field, 310 keywords were utilized, with a minimum cluster frequency of 6 and a maximum of 3 names per cluster. The KeywordPlus field puts in keywords that the authors missed while looking at the names of all the sources. The KeywordPlus field now more closely resembles the author's keywords. The use of Keyword Plus reveals the depth and significance of the narrative.

The importance of selecting a theme is shown on the X-axis, while the density on the Y-axis illustrates how the theme map in Figure 4 has evolved over time.

The four quadrants of the theme map are as follows:

Figure. 4. Theme Map



1) Upper Right Side Q1

Because they are both central and dense, the most significant and evolving topics are placed here. It will be quite fascinating to watch how AI influences customer engagement and consumer pleasure. "Customer Satisfaction" is a definite subject that

is emerging, and it encompasses several terms like "Decision Support Systems, Decision Making, Costs, Supply Chains, and Optimization."

2) Upper left quadrant Q2

'Niche themes' are in-depth research subjects that aren't particularly prevalent in the area at the moment. Data mining, COVID, and neural networks are some of the techniques that researchers look at when they examine AI and consumer contact. Internet of Things, genetic algorithms, and software testing were some of the keywords in the data mining subject, while "online systems," "fuzzy inference," "artificial neural network," and "customer services" were some of the keywords in the neural networks theme.

3) Lower left corner Q3:

'Growing themes', Display topics that are ending or changing. A new area of study called "Learning Systems" contains concepts like "Learning Algorithms, Regression Analysis, Support Vector Machines, Decision Trees, and Natural Languages."

4) Lower Right Quadrant Q4:

'Fundamental themes', that cut across significant or fundamental study topics are known as basic themes. These topics are not well covered (internal links). There are three major themes that can be identified based on how the terms are arranged: "Artificial Intelligence," "Chatbots," and "Sales." The terms "Consumption Behavior, Service Quality, Electronic Commerce, Robotics, Surveys, Perception, Retailing, Marketing, Technological Development, Automation, etc." demonstrate the first theme of AI. The third main theme is sales, which includes "Quality Control, Competition, Commerce, Design, Quality of Service, Technological Advancement, Data Acquisition, and Data Privacy" as terms. The second group of chatbots also includes some significant terms like "Natural Language Processing Systems, Students, Human-Computer Interaction, Conversational Agents, E-Learning," etc.

As shown in Table 7 there are 3 clusters representing basic themes i.e. Artificial Intelligence, Chatbots and Sales, 3 Niche Themes i.e. Covid-19, Data Mining and Neural Networks, one emerging theme of Learning Systems and customer satisfaction as Motor Theme.

Table 7. Themes and keywords in the thematic map		
Theme	**Representation as Clusters**	**Clustering Terms**
Basic Theme	Artificial Intelligence	Terms such as "artificial intelligence," "consumer behaviour," "service quality," "e-commerce," "robots," "surveys," "perception," "retail," "marketing," "technology advancement," "automation," "customer experience," "digital technologies," "the service sector," "shopping activity," "sustainable development," "business development," "digitalization," "innovation," "intelligent robots," "technology adoption," "anthropomorphism," "Australian banking
Basic Theme	Chatbots	Words and phrases like "chatbot," "Natural Language Processing Systems," "students," "human computer interaction," "conversational agents," "E-Learning," "Education Computing," "Knowledge Based Systems," "Software Engineering," "Application Programmes," "Behavioural Research," "Customer-Service," "Machine Learning," "Natural Language Processing," "Purchases," "Trust," "Agility," "Application In Education," "Crowdsourcing Systematic literature review, software applications, personalised service, management, and virtual reality
Basic Theme	Sales	Terms like "reverse logistics," "semiconductor device manufacturing," "social media," "social media analytics," "software prototyping," "quality control," "competition," "business," "design," "level of service," "technology advancement," "data collection," "data privacy," "healthcare," "manufacturing process," "quality assurance," "resource allocation," "sentiment analysis," "online social networking," "customer demands," "decision makings," "forecasts," and
Emerging/ Declining Theme	Learning Systems	Regression Analysis; Support Vector Machines; Decision Trees; Natural Language Processing; Learning Algorithms;

Theme	Representation as Clusters	Clustering Terms
Motor Theme	Customer Satisfaction	Money, Supply Chains, Customers, Decision Making, DSS, and Optimal Results Manufacturing, Product Design, Product Development, Production Engineering, Integer Programming Algorithms, Swarm Intelligence, Ant Colony Optimisation (ACO), Customer Loyalty, Customer Requirements, Decision Makers, Decision Supports, Design/Methodology/Approach, Economics, Competitive Environment, Bayesian Networks, and Scheduling. Topics covered include: heuristic algorithms, management, production, marketing strategies, and electric utilities. Functions with an aim, optimisations with several objectives, and optimisations Project management, process control, and particle swarm optimisation Transport vehicles, storage facilities, web browsers, statistical testing, management, public relations, the rollout of quality control functions, riveting, the service sector, and cutting-edge technological developments like text mining and time series analysis.
Niche Theme	Covid-19	CoV-19, Sars-CoV-2, Intelligent Systems, Transportation, Humans, Article
Niche Theme	Data Mining	Software Testing, Genetic Algorithms, the Internet of Things, and Data Mining
Niche Theme	Neural Networks	Topics including artificial neural networks, customer service, databases, fuzzy logic, numerical models, performance metrics, time frames, and neural networks are discussed. Internet, Water Networks, and Water Distribution Systems

Country Collaboration

This section includes the top AI and consumer interaction research countries. Table 8 show that China (120), USA (113), UK (78), India (74), and Australia (64) are the top five countries for scientific production. China and the US led the ranks with 13.36% and 12.58% of the total publications, respectively, contributing 50% of the total.

Table 8.: Country scientific production	
Country	**Article production**
China	120
USA	113
UK	78
India	74
Australia	64
South Korea	40
Spain	36
Germany	32
Malaysia	26
France	22

DISCUSSION

Due to the COVID-19 pandemic, AI and consumer interaction research has accelerated. This section summarizes and analyzes it. Several AI and consumer interaction research themes emerged from the study. Since there are few relevant papers in bibliometric databases, the authors say there is much to learn about this area. The paper indicates that AI and consumer interaction research is still in its early phases and that more research is required to fully understand this industry. This research may provide ways to enhance the company's customer contact approach. A method to evaluate how AI influences customer management might solve difficulties for customers, marketers, and external/internal stakeholders.

Future research should fix the present study's flaws. For instance, the study only looked at English-language articles, neglecting publications in languages like French, Spanish, and Chinese that may have supplied helpful information on AI and consumer engagement. The study restricted its bibliometric data to business management and social sciences, enabling other sectors to do comparable investigations. Future research may employ more databases to obtain bibliometric data from Scopus databases.

CONCLUSION

The study's emphasis on artificial intelligence and customer interaction as technology and research has an impact on service providers, politicians, marketers, consumers, and academics. Current research on this topic has focused on service quality, quality

control, and chatbots, but the authors suggest adding marketing, customer relationship management, ChatGPT, conversational agents, and artificial intelligence. They advise future scholars to concentrate on behavioral, marketing, and societal issues rather than technological ones. Future scholars may use the study's agenda.

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