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Chhatrapati Shahu Institute of Business Education & Research (CSIBER)
(An Autonomous Institute)
University Road, Kolhapur - 416004, Maharashtra State, India.
website : www.siberindia.edu.in
E-mail : editorsajmr@siberindia.edu.in

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(An Autonomous Institute)
University Road, Kolhapur - 416004, Maharashtra State, India
Phone : 0231-2535706 / 2535707
website : www.siberindia.edu.in
E-mail : editorsajmr@siberindia.edu.in

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C O N T E N T S

Factors Affecting Adoption Intention of AI: A Comprehensive Review with Bibliometric Analysis

PurvaKansal
Professor, University Business School, Panjab University, Chandigarh, India

ApoorvaDawara
Research Scholar, University Business School, Panjab University, Chandigarh, India

Abstract

Disruptive technologies such as the Internet of Things, big data analytics, blockchain, virtual reality, and artificial intelligence have significantly changed the ways in which businesses operate. Among these, artificial intelligence (AI) stands out as the latest technological disruptor with immense potential for marketing transformation. Despite this potential, there has been a lack of systematic efforts worldwide to organize existing AI research in B2C markets across various industries. This gap has spurred the need to establish a structured framework for AI adoption in B2C marketing and identify directions for future research. This study addresses this gap by conducting a comprehensive review of AI adoption research in the marketing discipline, employing a bibliometric analysis. This study systematically investigates the literature related to AI-enabled technology adoption in marketing and synthesizes state-of-the-art knowledge from 389 articles published between 2013 and 2023. The findings indicate a growing trend in the number of publications related to AI technology, especially after 2019. There is acceptance of new technology in different aspects of companies to enhance their value chain activities, with at least 100 publications per year after 2013. The results further reveal the most productive and influential journals, articles, authors, and countries in the field of AI technology across different industries. This study enriches the existing literature on technology acceptance in B2C marketing, offering a structured approach. It highlights five key areas that assist researchers and practitioners in evaluating their current AI usage and pinpointing future needs, enabling informed decisions on AI investments in relevant domains.

Keywords: Artificial Intelligence, Technology Adoption, Adoption Intention, Innovativeness, Bibliometric Analysis

Introduction

Statistics indicate that the companies' expenditure on AI-related investments in India will increase from $665 million in 2018 to approximately $11,781 million by 2025, indicating an increase of compound annual growth rate by 39% (Forbes, 2023). This increase in companies' expenditure on AI would mean that the value chains and systems of the companies are going to be modified. Therefore, AI influences the ways in which business is done.

The contribution of AI to the field of business is not only limited to the modified ways of doing business but it has started playing different types of roles that influenced many researchers to study AI in various B2B and B2C aspects. A review of the literature within this premise of different contributions of AI indicated that these studies were not only diversified but also scattered. There seem to be a lot of inconsistencies between how researchers perceive AI-related aspects and reality.

The review of literature also indicated that the research was heavily skewed toward AI and its contribution to B2B markets (Han et al., 2021; Chen et al., 2022) however, very limited research was found for B2C markets. It was further found that there was a lack of research that analyzed and structured the research related to AI in B2C marketing. This lack of structure, in turn, seemed to influence the B2C research as the new research was more overlapping rather than centered on pushing new boundaries. It was within this backdrop that the present study was undertaken.

The existing literature indicated different methodologies to meet the research objectives such as systematic literature review, bibliometric analysis, and meta-analysis. However, for the present study, bibliometric analysis has been preferred to comprehend and map the current state of knowledge and evolutionary nuances ofthe AI field. Therefore, the present study aims to present a state-of-the-art review of AI adoption research across industries and highlight potential areas for future research by providing a structure to the existing literature. The article is organized as follows: Section 2 provides a brief overview of AI. Section 3 outlines the research methodology of the study. Section 4 presents the findings of the study. Section 5 provides a brief conclusion of

the study. Section 6 highlights the potential areas of future research. Section 7 discusses the limitations of the study.

Artificial Intelligence

The term "Artificial Intelligence" was originally coined by John McCarthy in 1955 during a workshop held at Dartmouth. Since then, it has evolved into a potential tool that enabled computer software to emulate human thinking and behaviour. It has been defined as "machines that simulate cognitive and affective functions of the human mind" (Russel and Norwig, 2016).In the current context, AI is perceived as a technology that has the ability to imitate human actions and complete tasks intelligently, showcasing its intelligencethrough cognitive, emotional, and social aspects.

A brief review of B2B literature found that existing researchers were working on a diverse array of dimensions for their complex dynamics. The actual deployment of AI applications within this context has provided a transformative lens to examine the interplay between various actors. Keegan et al. (2021) highlight how the priorities and motives behind AI adoption configure power dynamics among focal firms, AI suppliers, and tech giants. Other researchers like Paschen et al. (2019), Kumar et al. (2020), and Han et al. (2021) explored the technological innovations shaping B2B marketing. Paschen et al. (2019) shed light on how AI can enhance B2B marketing by improving information sharing through a knowledge management approach. Additionally, Chen et al. (2022) explore different types of AI and their effects on B2B marketing, revealing the various ways AI transforms the field. Beyond operational benefits, Bag et al. (2020) emphasize AI's capacity to enhance knowledge creation and rational decision-making in B2B interactions that directly impact the overall company performance. Therefore, it is seen that B2B research was exhaustively done by many researchers.

A similar attempt to review the B2C literature indicated that the studies have explored the integration of AI within CRM systems to enhance B2C relationships (Chatterjee, 2022), the impact of social robots on human lives (De Keyser & Kunz, 2022), the role of AI algorithms in shaping consumer adoption behaviour in the banking sector (Hentzen et al., 2022), and user attitudes towards different types of AI-based technologies like virtual personal assistant devices (Yang & Lee, 2019). However, there is a noticeable absence of comprehensive and structured research that focuses on how AI applications can be used in the context of B2C marketing. It is pertinent to note that the frequency of structured B2C research was very less as compared to B2B, with the former exhibiting overlapping themes that lack a distinct concentration for future exploration.As a result, past researchers are not systematically pushing the boundaries so that it can be integrated and practical implications in this space have become apparent.

It was within this backdrop, the present study was undertaken for B2C marketing with a focus on providing structure to the existing literature on the Adoption of AI through bibliometric analysis.The research methodology used for the present study is discussed in the next section.

Research Methodology

To comprehend and structure the current knowledgeon theadoption of AI across different industries,bibliometric analysis was conducted. There are two distinct reasons for using bibliometric analysis. Firstly, it possesses the capacity to effectively handle vast volumes of bibliographic data, and Secondly, it aids in the impartial identification of influential research work within the respective field" (Zupic&Čater, 2015; Donthu et al., 2021).To conduct the analysis, a methodology proposed by Donthu et al. (2021)has been adopted. The methodology provided a four-step procedure as follows:

- Defining the aim and scope of the study
- Choosing the techniques for bibliometric analysis
- Defining the search terms, database and data
- Running and reporting the findings of the analysis

The detailing of a four-step procedure is discussed in the following section.

The aim of the present study is to provide a thematic structure to the existing literature on the adoption of AIresearch. In order to sort the structure, the objectives of the present study were broken down into four research stages.

RQ1: What are the current publication trends (number of articles by year) in adoption of AI across industries?

RQ2: What are the most influential publications (journals, articles) related to adoption of AI across industries?

RQ3: Who are the most productive and influential contributors (authors, countries) in adoption of AI researchacross industries?

RQ4: What are the existing themes (conceptual structure) of AI adoption across different industries and what are the potential future research areas in the field?

In an effort to limit the study's scope, an intensive analysis of existing scholarly work was done. The analysis revealed that the majority of bibliometricarticles proposed the 10-year analysis for studies(Sweileh et al., 2017; Forliano et al., 2021;Gaoet al., 2021). Therefore, the review period for the study was confined to 10 years, spanning from 2013 to 2023 for three primary reasons, i) the suitability of a 10-year duration, ii) a substantial number of articles were available within this timeframe, and iii) less than 100 articles per year before 2013 and a notable increase after 2013.

The next stepisto identify the pertinent keywords to search bibliometricdata. For the present study, the first 15 articlesrelated to AI and its adoption in management from Google Scholar wasused.Acontent analysis of these 15 articles indicated that the most repetitive keywords were'Artificial intelligence', 'technology adoption/ innovation adoption', and 'Adoption intention/ intention to use' from the list of keywords. Therefore, it was decided to use these top three keywords to search for the relevant literature.

After shortlisting the keywords, the next step is to shortlist the appropriate database for analysis. Three different databases were considered for the present study namely Scopus, Web of Science, and EBSCO. Out of these three databases, a review of literature indicated the Scopus database is one of the best databases for the bibliometric review search as it provides a more extensive range of scholarly information(Kumar et al., 2022; Tiwary et al., 2021; Xu et al., 2018). Therefore, the bibliometricdata for the present study were retrieved from the Scopus database.The search query applied was: ((TITLE-ABS-KEY (*"adoption intention"*) OR TITLE-ABS-KEY (*"intention to use"*) OR TITLE-ABS-KEY (*"intention"*))) AND ((TITLE-ABS-KEY *("AI"*) OR TITLE-ABS KEY (*"Artificial intelligence"*) OR TITLE-ABS-KEY (*"AI technology"*))).

The initial search yielded a total of 523 articles (as of March 2023), published between 2013 and 2023. Multiple filters were applied in order to refine 523 articles. Based on the previous bibliometricstudies, the articles were filtered for their "subject area", "document type", "source type", and "language" in the Scopus database. The subject area was limited to "Business, Management, and Accounting" and "Social Sciences". The source type and document type were limited to "Journal" and "Articles", respectively, as journal articles are subjected to rigorous peer-review, and thus ensure the quality of research findings. Finally, the language was limited to "English" due to translation issues.The filtration process, involving the removal of misspelled, incomplete, and irrelevant elements, resulted in a final selection of 389 articles for the present study (Table 1).

Table 1: Selection Process of Articles from 2013 to 2023

Review period	2013-2023	**No. of articles**
Database	Scopus	
Keywords	"artificial intelligence", "AI technology", "adoption intention", " intention" and "intention to use"	3618
Filters	**Subject area:** Business, Management, and Accounting & Social Sciences	430
	Document type: Articles	
	Source type: Journal	
	Language: English	
Omitted cells	misspelled, incomplete and irrelevant elements	41
Articles for Final Analysis		**389**

Source: Authors' own elaboration

The last step in methodology is related to running and finding the analysis, therefore, for the present study, a biblioshiny application (R software, version 4.2.2) has been used to conduct the bibliometric analysis. The detailed analysis of the findings of the study is discussed in the next section.

Analysis

Bibliometric analysis analyzes the data in four different aspects, namely, publication trends, publication performance, contributor performance, and conceptual structure. It is pertinent to note that the biblioshiny application used different techniques such as performance analysis for publication trend, citation analysis for publication and contributor performance, and co-word analysis for conceptual structure. Therefore, for the present study, these particular techniques were used in order to comprehend and map the structure of existing literature on AI adoption in differentindustries. The following sub-sections present the results of the analysis, addressing each one of the four aspects of bibliometric analysis.

Publication Trend

To analyze the publication trend related to the AI adoption in business articles over a period of ten years (2013-2023),a publication performance technique was used. The analysis indicated a growing trend of AI adoption research across different industries. The majority of publications were started from 2013; however, there was a significant shift in AI-relatedpublications only after 2019. A manual analysis of the articles published from 2013 to 2018, indicated that the maximum work done in AI-related aspects was published by other than

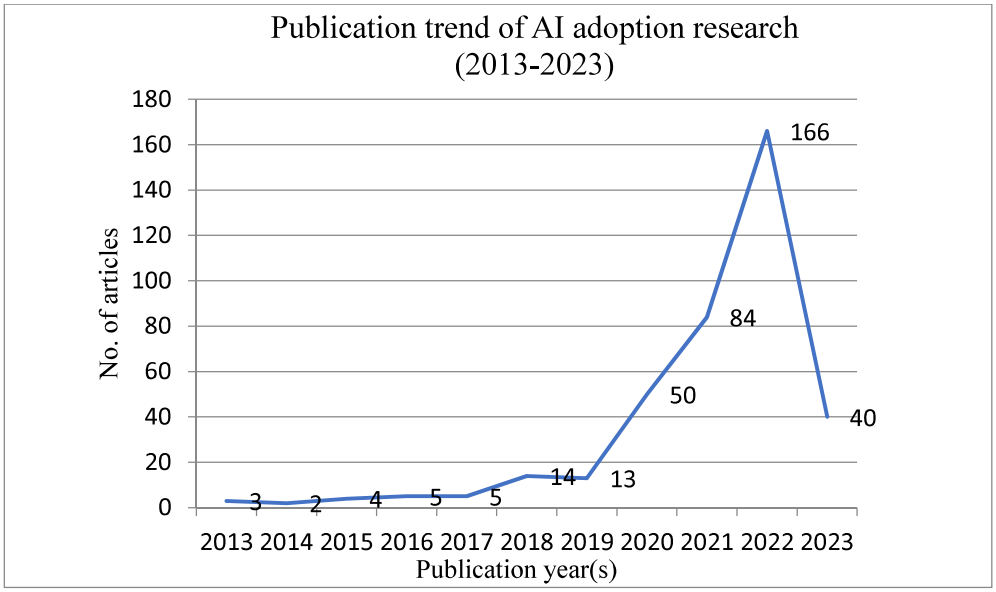


Fig 1: Publication trend

Note: * publications are till March 15, 2023

Source: Authors' representation

Marketing disciplines, whereas, the publications from 2019 to 2023 highlight the huge growth of publications that can be attributed to the replacement of old management tools with new aspects of technology like artificial intelligence in organizations was published by marketing as well as other than marketing disciplines.

Publications' performance

The second stage in bibliometric analysis was to analyze the publications' (journals and articles) performance using citation analysis by biblioshiny application. The results of the analysis are discussed in the following two sub-sections, namely, journal performance and article performance.

Journal performance

The journal performance was analyzedon the basis of a list of 389 articles that were retrieved from the Scopus database. The results of the analysis indicated that thesearticles were distributed across 223 sources (journals). A manual review of the journal titles indicated that out of 223 journals, 44 journals were from the marketing discipline; and 179 journals were fromdisciplines like engineering, sustainability, tourism, statistics, etc and these have been clubbed as "other than marketing journals" for the analysis purpose. Additionally, it was noticed that 87 publications out of 389 were published in 44 marketing journals over the period of 2013 to 2023whereas the remaining 302 were published in 179 other than marketing journals which indicates the application of AI and AI-based research is in a nascent stage in marketing.

Furthermore, an analysis found that Sustainability (Switzerland) (29 articles) and Technological Forecasting and Social Change (13 articles), which are related to other than marketing journals were the most popular journals for publishing AI and AI-related work, whereas Psychology and Marketing (11 articles) and Journal of Business Research (11 articles) are related to marketing journals (table 2). The majority of the journals in the top 10 journal's list also fell into the A* or A category.

A content analysis of the marketing discipline journals was undertaken to identify the aspects in which top-cited journals have been working. It revealed that the majority of articles published were trying to analyze mainly three aspects, i) impact of human-to-human and human-to-machine interactions on the continuation of usage of AI technologies, ii) scale development process for AI-chatbot service quality, and iii) investigates the factors and psychological traits that affect the AI decision-making process and engagement levels. The literature also

indicated that the majority of articles in marketing journals were using models such as the humanness value loyalty model, valence perception theory, media richness theory, SOR model, BRT theory, realism maximisation theory, innovation diffusion theory, TAM model and flow theory as a theory development base.

Table 2: Top 10 Marketing and other Journals

Marketing Journals			Other Journals		
Journals (Rating as per ABDC list)	**Total Citations**	**Total articles**	**Journals (Rating as per ABDC list)**	**Total Citations**	**Total articles**
Psychology And Marketing (A)	231	11	Business Horizons(B)	490	**2**
Journal Of Retailing And Consumer Services (A)	194	7	Sustainability (Switzerland) (A)	411	29
Journal Of Business Research (A)	137	11	International Journal Of Information Management (A*)	373	5
Journal of Hospitality marketing and management (A)	96	1	Tourism Management(A*)	336	3
Australasian Marketing Journal (A)	72	1	Accident Analysis And Prevention (A*)	315	3
Journal Of Marketing Management (A)	66	3	Knowledge-Based Systems(A)	273	2
Journal Of Marketing (A*)	54	9	Transportation Research Part C: Emerging Technologies(A*)	219	1
Journal Of Service Management (A)	49	3	Technological Forecasting And Social Change (A)	211	13
Journal Of Research In Interactive Marketing (B)	28	3	Artificial Intelligence (A1)	139	10
International Journal Of Bank Marketing (A)	21	4	International Journal Of Contemporary Hospitality Management (A)	129	3

Source: Authors' own elaboration

An analysis of articles from other than marketing discipline journals indicated that the majority of work was related to the aspects, i) factors nurturing virtual flow experiences between customers and different types of AI technologies, ii) importance of AI in managing risk and customer service landscape, and iii) the developing field of robot journalism.

After comparing journals of marketing discipline with the other disciplines, it becomes evident that despite their different scopes, there are common thematic threads that connect them. Notably, both disciplines share a primary focus on exploring the factors influencing the adoption of artificial intelligence (AI), within distinct contexts.

In the realm of marketing journals, research examines the factors such as perceived value, risk barriers, trust, continuance intention, social influence, and price value. Conversely, studies in other than marketing journals centeredon factors like ease of use, hedonic motive, trust, performance expectancy, effort expectancy, and behavioural intention. Therefore, it is pertinent to note that the scope of these two disciplines is significantly different andcross-disciplinary integrated studies are required in the field to push the boundaries in a centered way

Articles Performance

An article's performance was done using citation analysis, measured by two types of citations: local citations and global citations. The local citations refer to the inter-citationamong articles in the review corpus (e.g., 389 articles that were retrieved from the Scopus database), while global citations refer to the number of citations that an article receives from within and outside the review corpus (Kumar et al., 2021).For the present study, biblioshiny application (R software, version 4.2.2) did not retrieveany local citations however, theglobal citations indicated thatthe highest number of citations i.e., 445 global citations were received by one article out of 389, written by Jarrahi M. H. in 2018 focused on the effects of human-to-human and human-to-machine

interaction in organizational settings in the context of services. In addition, out of the remaining 388 articles, 91 articles depictedzero global citations. It was further found that out of 91, 80 articles were recently published from 2022 to 2023and it takes some time to influencewith a good number of global citations. The content analysis of other 11 articles out of 91indicated that they did not provide exhaustive informationin terms of methodologies, analytical tools, and analysisdueto which their intense was suffering, thereby indicating that the comprehensive style of research paper was very important to generate the citations.

In order to draw more conclusions about the article performance analysis, the top 10 influential articleswere extractedbased on global citations. A content analysis of these top 10 globally cited articles indicated that they could be grouped into five thematic categories by the researcher. It seems that two were in group-1, five were in group-2, and one each in the rest of the three groups, indicating that most researched category as of now was factors affecting adoption intention of AI. It is pertinent to note that articles in group-2 were published by both marketing as well as other than marketing journals.

Furthermore, many researchers were also interested in AI ethics and human-machine collaboration. Out of 389 articles, approx. 6 percent of articles related to human-machine interaction and approx. 2.5 percent of articles related to AI ethics werepublished after 2020 in addition to the factors-related articles.

An in-depth analysis of five articles in group-2 presents a theme of "Factors affecting adoption intention of AI", and examines the factors such as, perceived usefulness (PU), perceived ease to use (PEU), perceived trust (PT), social influence (SI), service assurance (SAR), empathy (EPM), personal engagement (PENG), perceived value (PV), information sharing (ISR), subjective norms (SN), perceived behavioural control (PBC), parasocial relationship (PSR), perceived risk (PR), technology attributes, perceived intelligence, anthropomorphism, and perceived animacy. This field explored different theoretical models and factors which were influenced the adoption and acceptance of AI across different industries.

Table 3: Top 10 Most Cited AI-based Articles

Themes	Article title	Author(s)	Global Citations
Human-technology symbiosis	Artificial Intelligence and the Future of Work: Human-AI Symbiosis in Organizational Decision Making	Jarrahi, 2018	445
	Hotel employee's artificial intelligence and robotics awareness and its impact on turnover intention: The moderating roles of perceived organizational support and competitive psychological climate	Li et al., 2019	170
Factors affecting adoption intention of AI	Consumers acceptance of artificially intelligent (AI) device use in service delivery	Gursoy et al., 2019	256
	An empirical investigation on consumers' intentions towards autonomous driving	Panagiotopoulos &Dimitrakopoulos. 2018	219
	Leveraging Human-Robot Interaction in Hospitality Services: Incorporating the Role of Perceived Value, Empathy, and Information Sharing into Visitors' Intentions to Use Social Robots	De Kervenoael et al., 2020	156
	Psychosocial factors associated with intended use of automated vehicles: A simulated driving study	Buckley et al., 2018	141
	Understanding adoption of intelligent personal assistants - A parasocial relationship perspective	Han & Yang, 2018	127
Review paper	Influences of the Industry 4.0 Revolution on the Human Capital Development and Consumer Behavior: A Systematic Review	Sima et al., 2020	150
AI Ethics	From What to How: An Initial Review of Publicly Available AI Ethics Tools, Methods and Research to Translate Principles into Practices	Morley et al., 2020	148
Imbalanced datasets & machine learning	Analysing the classification of imbalanced data-sets with multiple classes: Binarization techniques and ad-hoc approaches	Fernández et al., 2013	273

Source: Authors' own elaboration

Therefore, the results of the article performance analysis indicated that writing style as well as its area is very important to gaining positioning in the field. An article had to be comprehensive and detailed in order to generate citations. The plausible futureareas for research are to explore the following, i) impact of three ways of interaction (AI, manual, human-to-machine) into the different contexts of marketing, ii) ethical implications of AI, and iii) different types of factors which influence the AI continuance intention across industries.

Contributors' Performance

After analyzing the publications' trend and performance, the subsequent stage in bibliometricanalysis related to the contributors' (authors' and countries') performance.For the present study, contributors' performance has been measured in terms of productivity and citations which in turn have been measured by the number of articles published by an author/a country and the total number of citations achieved by an author/ a country, respectively. The results of the contributors'performance analysis are discussed in the following two sub-sections, namely, author performance and country performance.

Author performance

In order to evaluate the author's performance, the review corpus of 389 articles was analyzed, and found that thesearticles were authored by a total of 1163 authors. Among these articles,42were identifiedas sole authored publications, whilethe remaining 347publications were published by 1121 authors collectively. This suggeststhat an average of 3 authors per publication, thereby indicating that this field employed a cross-disciplinary and co-authored approach.

Furthermore, author's performance was analyzed in detail on the basis of two aspects, namely, productivity and citations. The results of the productivity analysis of 389 articles indicated that Dwivedi Y. K. was the most productive author in this field, with 11 publications in the period of 2020 to 2023 (Table 4). Also, all 11 publications of Dwivedi Y.K. were co-authored, and two of his co-authors, namely, Pillai R. andSiwathanu B. were featured separately in the most productive authors list with 6 articles each from 2020 to 2023 respectively. Thesearticles have been published in both reputed marketing journals and other than marketing journals. Their primaryfocus has beentoinvestigatethe key motivators for both consumers and managersin adoption ofdifferent types of AI-based technologies across various industries. Additionally, they addressed consumer privacy concerns related to AI in studies.

The results of citation analysis highlight the most influential author in the particular field indicating that Jarrahi M. H. was the most influential author with only one publication related to "Human-AI Symbiosis in Organization". It gained 445 citations between 2018 and 2023 by focusing on the idea of "intelligence augmentation" which means AI systems should be designed with the intention of augmenting, not replacing human contributions, thereby indicating that it is one of the base papers of research in this area.The other influential authors in this field are Gursoy D. (421 citations, 4 publications), Chi O.H. (391 citations, 3 publications), Del Jesus M. J.(273 citations, 1 publication) and Dwivedi Y.K. (292 citations, 11 publications), followed by Jarrahi M.H. (445 citations, 1 publication). A content analysis of their articles indicated that the influential authors were mainly focused on understanding the factors or motivations that influence consumer attitudes towards AI across different industries.

Table 4: Most Productive and Influential authors

Most Productive Authors (with more than three articles)			Most Influential Authors	
Authors	**Publication start year**	**No. of Publications**	**Authors**	**Total Citations**
Dwivedi Y. K.	2020	11	Jarrahi M. H.	445
Kim J.	2021	6	Gursoy D.	421
Pillai R.	2020	6	Chi Oh	391
Siwathanu B.	2020	6	Dwivedi Y K	292
Casalo L. V.	2021	6	Del Jesus M. J	273
Flavian C.	2021	4	Fernández A.	273
Gong Y.	2021	4	Galar M.	273
Gursoy D.	2019	4	Herrera F.	273
Lee S.	2020	4	Lopez V.	273
Lu Y.	2021	4	Lu L.	256

Source: Authors' own elaboration

Therefore, a contributor performance analysis indicated that though Dwivedi Y.K. was the most productive author with 11 publications in the time frame of 2020 to 2023,Jarrahi M. H. was the most influential author with only one publication published in 2018 and achieved 445 citations. The focused area for Dwivedi Y.K. was to explore the factors influencing AI adoption whereas Jarrahi M.H. focused on the integration of humans and machines in service context, thereby indicating that the productive author as well as influential author was working in the key areas of AI as indicated in table 3. In addition, there was no article related to AI ethics in the top 10 cited authors list which indicates that though it is an emerging area but has traditionally beena neglected area, so, future researchers should explore and push the boundaries of this area in addition to human-machine integration and factors affecting adoption intention of AI in detail.

Country's performance

In order to evaluate the country's performance, the review corpus of 389 articles was analysed, and found that these articles were published by a total of 60 countries. It was analyzed in detail on the basis of two aspects, namely, productivity and citations. The results of the productivity analysis based on their affiliations of corresponding authors China was the most productive country in the field of AI adoption studies, with 69 publications. Interestingly, out of 69, 50 were single-country production and 19 were related to multi-country production (Table 5).A content analysis of 69 articles published by China primarilyfocused on antecedents and consequences of usage of AI across diverseindustries. The results further indicated that the USA (n=42), Korea (n=36), and India (n=27) were the second, third, and fourth most productive countries in the field, respectively.

Table 5: Most Productive and Influential countries

Most productive countries (with 8 or more articles)				Most influential Countries	
Country	**No. of Articles**	**Single Country Production**	**Multiple Country Production**	**Country**	**Total citations**
China	69	50	19	China	868
USA	42	34	8	United Kingdom	604
Korea	36	26	10	USA	533
India	27	22	5	Korea	465
United Kingdom	20	2	18	Spain	401
Spain	11	9	2	India	362
Australia	9	4	5	France	282
France	9	2	7	Australia	257
Malaysia	9	4	5	Mauritius	256
Germany	8	7	1	Greece	252

Source: Authors' own elaboration

The results of the citation analysis highlight the most influential country indicated that China was the most influential country in terms of their impact on the field and generated 868 citations across 69 publications, followed by the UK with 604 citations across 20 publications, and the USA with 533 citations across 42 publications (Table 5).These statistics indicated that both developed and developing countries were contributing to the field in terms of impact on the field, but one of the developing countries (China) had the upper handin both productivity and citation analysis. Therefore, an attempt was made to identify the areas in which developed countries and developing countries were working in order to have a greater influence. For this, a content analysis of the articles published by the two developed countries (i.e., USA and UK) and three developing countries (China, Korea, and India) in the list of the top ten influential countries was done. The results of the analysis indicated that the developing countries were working on software integration's impact on new learning apps, the recruitment process, and role of ethics and values in consumers' intention to use AI technology. They also explored the impact of different types of AI technology on consumer perception and engagement across different industries while developed countries investigated the interaction of humans and machines for enhanced consumers andemployeesexperiences in service settings, the application of AI in healthcare and aviation industries, and how digitalization influences the decision-making of different users. The developed countries mainly relied on experimental studies, while developing ones concentrated on quantitative research studies.

Therefore, the country's performance analysis shed light on a prevalent trend of usage ofAI technologies across different countries and highlighted that China was the most productive as well as influential country in this particular field.Based on the content analysis, it can be argued that both developed and developing countries were working on similar themes such as exploring the factors that influence the acceptance of AI, integration of

humans with technology, and AI ethics by focusing on different industries. To increase the influence of their work, developed countries could explore and investigate the emerging area of AI with quantitative studies, and developing nations should concentrate on validating the ideas put forth by developed nations. In addition, there is a need to improve the research field in specific countries by focusing on unique cross-cultural aspects, on which other countries have already taken the leadfrom 2013 to 2023.As the field of AI research continues to expand into different industries, future researchers are encouraged to not only focus on the technical aspects but also to consider the impact of diverse cultural contexts. They can also explore how various cultural perspectives intersect with research themes to offer valuable insights and contribute to a more comprehensive understanding of AI's implications across the globe.

Conceptual structure

The fourthstage in bibliometric analysis was to explore the conceptual structure of AI adoption research from a review corpus of 389 articlesusing co-word analysis by biblioshiny application. Thisconceptual structure attempts to establish the link between different concepts in the research field.For the present study, two science mapping techniques namely, keyword co-occurrence analysis and thematic map analysis were used to build the structure. Their results are discussed in two sub-sections, namely, keyword co-occurrence analysis and thematic map analysis.

Keyword Co-occurrence Analysis

In order to analyze the co-occurrence of keywords to build the conceptual structure, a review corpus of 389 articles was used. This analysis examines the actual content of the articles in terms of words that are often derived from authors' keywords. These words were then assembled into clusters based on their thematic similarities, thereby allowing researchers to identify relevant themeswithin different clusters that have gained substantial attention. Therefore, the present study performed a keyword co-occurrence analysis of those authors' keywords that had appeared at least three times (n=48).

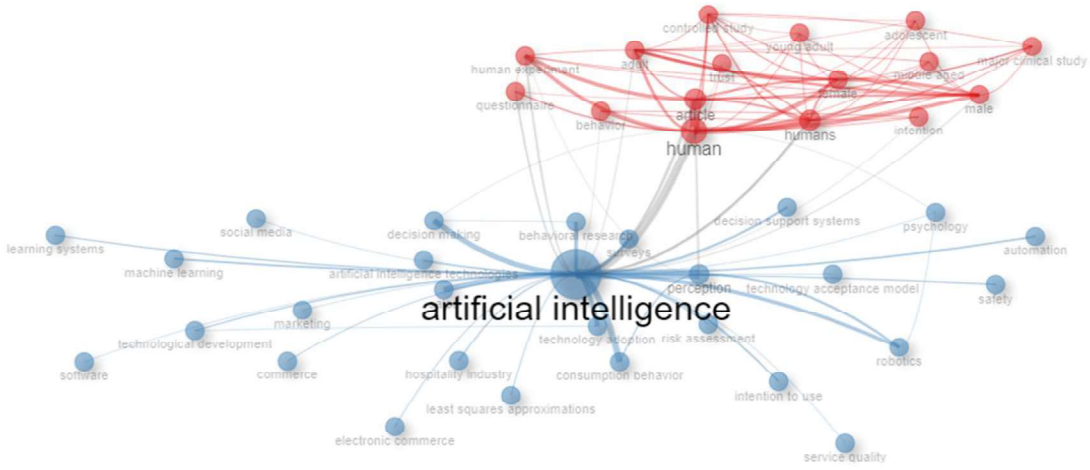


Fig 2: Keyword co-occurrence analysis

Notes: The circle represents the keyword. The lines between the circles represent the co-occurrence of the keywords and the width of the line represents the number of co-occurrence of the keywords. The closeness of circles represents the degree of association of keywords, wherein the closer the circles, the greater the association of keywords. The colour represents the cluster to which a keyword belongs.

The results of analysis (Fig 2) indicated that co-occurred keywords could be clustered into two clusters (represented by different colors), wherein keywords in each cluster represent a theme on which AI research in different industries was being conducted. Consequently, the two identified clusters are concluded in detail.

Cluster 1(Blue color): Factors affecting the acceptance of AI

The analysis of keywords in cluster 1, represented (fig 2) with blue color, indicates that the research in AI field were trying to focus on different types of factors that directly or indirectly influence the acceptance or adoption intention of AI in various contexts. In real practice, the acceptance of AI is still in its infancy stage due to its harsh impact on employee performance and turnover (Jarrahi, 2018); cognitive and emotional state (Rodgers et al., 2021; Zhu et al., 2023); democratic integrity (Bazarkina & Pashentser, 2020; Sharma et al., 2023);and consumer information disclosure (Kronemann, 2023).Additionally, different researchers examine the different concepts as drivers or motives such as emotional creepiness, personalablenss perception, and perceived fairness

(Kochling & Wehner, 2022); parasocial interaction, perceived usefulness, and perceived ease of use (Cheung et al., 2020; Park & Kim, 2023); perceived agency and perceived experience (Sullivan et al., 2022); generativity, openness, entrepreneurial orientation, technology orientation, and business innovativeness (Upadhyay et al., 2023); credibility (Cheung et al., 2020); perceived risk (Pan et al., 2019; Shi et al., 2021; Gupta et al., 2021; Atwal et al., 2021; Lee & Chen, 2022); management support and competitive pressure (Hmoud, 2021); performance expectancy, social influence, and perceived benefits (Upadhyay et al., 2022); organizational readiness, trust, reliability, and perceived socialness (Hsieh & Lee, 2021; Mclean et al., 2021; Meriouchi et al., 2023).

Furthermore, a content analysis suggested that the actual usage of AI was not limited to one sector; different researchers were trying to broaden the scope of AI technologiesacross different industries such as manufacturing, hospitality, e-commerce, healthcare, customer service, banking, robo-advisories, robot journalist, educational institutions, etc. The increasing role of AI in different aspects was explored with the help of some theoretical models of decision-making theories, TAM, humanness value loyalty model, SOR framework, BRT theory, realism maximisation theory, innovation diffusion theory, flow theory, and theory of mind perception.

Cluster 2(Red color):Interaction of Humans and Technology

The analysis of keywords in cluster 2,represented (fig 2)with redcolor, mainly focuses on human-related aspects. It depicts the collaborative role of humans and technology innovation, wherein researchers found that AI significantly changed the overall work perspective of human lives.The rise of an alliance between humans, AI, and human-machine shifts the vision of work into creativity and provides valued outcomes across industries.

A thorough analysis of various studies (Jarrahi, 2018; Li et al., 2019; Balakrishnan &Dwivedi, 2021; Kim et al., 2023) reveals that they examined the consequences (positive or negative) of integrationbetween humans and machineson different aspects of society.Also, they attempted to examine whether there is a difference in human-human interaction or human-machine interaction in shaping customer engagement. The manual analysis of their content highlighted that AI and humanspossess different but complementary capabilities essential for effective decision-making, and they also considered it as one of the most disruptive forces in the business landscape in the coming years.

Furthermore, researchersconcentrated on how the users' psychological and personality factors affect the selection ofchatbots or similar assistantsto perform tasks through technology in different settings (Jin & Eastin, 2023; Belunche et al., 2021; Dwivedi et al., 2020).Among these factors, trust is one of the crucial psychological factors,relying on three dimensionsfor users, namely, performance, process, and purpose (Park, 2020), which helps them in building the service value expectations. Likewise, other unexplored factors in various contexts need to be explored for broadening the field of AI.

Therefore, the keyword co-occurrence analysis indicatedthe two pre-dominant themes, i) exploring factors and consequences Related to AI Acceptance in Organizational Aspects, and ii) the impact of human and machine interaction, among researchers.These identified themes closely align with the key areas that were outlined in Table 3 of the present study. Consequently, future researchers need to explore the relatively less-explored facets of AI-driven factorsnamely, perceived anthropomorphism, perceived animacy, perceived intelligence, organizational fit, perceived value, service quality, customer satisfaction, customer value, and personal concerns. Theyalso need to emphasize on the emerging concept of human-machine integration. It involves a deeper exploration of how humans and machines can collaborate seamlessly and effectively to enhance decision-making, productivity, and overall organizational performance.

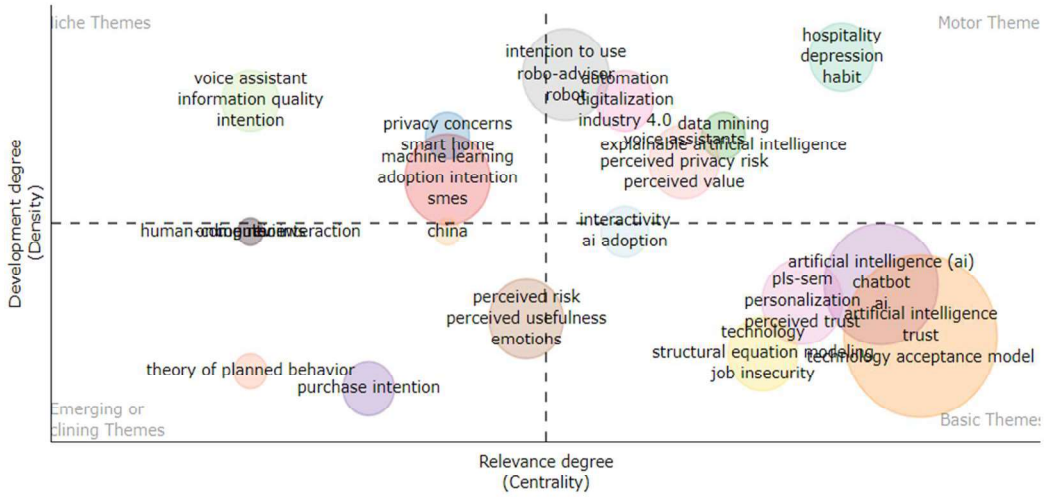
Thematic Map Analysis

In order to identify current themes or future aspects related to the AI research field, the present study performed a thematic map analysis. Thematic maps are identified based on their centrality (plotted on the X-axis) and density (plotted on the Y-axis). Centrality measures the level of inter-cluster interactions, indicating how extensively a topic is connected with others and holds significancewithin a specific domain. On the other hand, density measures the level of intra-cluster cohesion, specifically assessing the interconnectedness of keywords within a given cluster, thereby forming a thematic concept. The map highlightsthe themes based on their quadrant placement: (1) Q-1: motor themes; (2) Q-2: basic themes; (3) Q-3: emerging or disappearing themes; (4) Q-4: very specialized/niche themes. The results of the thematic map analysis indicated the four quadrants (Fig3) that were focused on present and future research related to AI acceptance in different aspects.

The first quadrant (Motor-themes), indicated by the high density and centrality in the research field, the biblioshiny application identifiedfive different clusters. The first and second cluster demonstrates a high degree of inter-cluster interaction, primarily including concepts such asrobo-advisors, automation, digitalization, and industry 4.0, and intention to use. The third and fourth clusters are also indicatesa significant degree of relatednessbetween concepts such as data mining, voice assistant, explainable artificial intelligence,perceived

risk, and perceived value. The fifth clusterexhibits independent concepts which are intra-connected such ashospitality, depression, and habit, each with its influential impact on the field.

Fig-3: Thematic Map Analysis



The second Quadrant (Basic themes), indicated by high centrality but low density, these topics hold importance for future research as they had low dense in the research field. This quadrant depicts five clusters in it. Out of five, four clusters revealed high inter-connectedness as well as intra-cohesion and includedconcepts such as job insecurity, personalisation, trust, technology, techniques like SEM, chatbot, and theories like TAM.One remaining cluster contains concepts such as interactivity and AI adoption.

The third quadrant (Emerging or disappearing themes), indicates the topics that have been used but are on a declining trend, indicated by low centrality and density. This region exhibits five clusters. All five clusters revealed low degree of relatedness between clusters. The different concepts in all five clusters includethe theory of planned behaviour, human-machine interaction, purchase intention, china, perceived usefulness, risk factor in technology, and emotions.

The fourth quadrant (Specialized/niche themes)focuses on the specific and under-represented topics whichare not able to influence other researchers. This is indicated by high density but low centrality, identified three clusters out of which two clusters exhibit the a high degree of correlation between them. The inter-connected clusters indicate the concepts such as privacy concern, smart home, machine learning aspect, adoption intention, and SMEs. The remaining cluster contains concepts like information quality, voice assistant, and intention.

Therefore, the thematic mapping analysis revealeddifferent clusters in four regions, each shedding light on different concepts and their intense within the field. The clusters identified in the first and second quadrantsare closely relatedtothe key area of factors affecting adoption intention of AI, as outlined in Table 3. In the third quadrant, one of the clusters highlights the emerging theme of consequences arising from the integration of human and machines. Meanwhile, the fourth quadrant is linked to privacy concerns while using AI technologies, signifying the ethical perspective of AI. These key areas require further exploration in future researchso that the emerging themes can gainmore influence and pave the way for broader advancements within the field.

Conclusion

The present study aimed to present a state-of-the-art review of AIresearch in differentindustries and highlight potential areas of future exploration by providing a structure to the existing literature. In order to achieve this objective, a bibliometric analysis of the 389 articles on AI adoptionthat were published between 2013 and 2023 in the Scopus database was done. The results indicated a growing trend in the number of publications on AI across various industries, especially after 2019.

The publications' performance analysis indicated that the research on AI can be published in marketing as well as other than marketing journals like Sustainability (Switzerland) (29 articles) and Technological Forecasting and Social Change (13 articles) were the most popular other than marketing journals, whereas Psychology and Marketing (11 articles) and Journal of Business Research (11 articles) are related to marketing journals, by focusing on exploring the factors, namely, perceived value, risk barriers, trust, continuance intention, social

influence, and price value, ease of use, hedonic motive, trust, performance expectancy, effort expectancy, and behavioural intention. It is pertinent to note that the scope of these two disciplines is significantly different and cross-disciplinary integrated studies are required in the field to push the boundaries in a centered way.In addition, the writing style as well as its area is very important to gain positioning in the field. An article had to be comprehensive and detailed in order to publish the article and generate citations.

Furthermore, the contributors'performance analysis indicated that though Dwivedi Y.K. was the most productive author with 11 publications in the time frame of 2020 to 2023, Jarrahi M. H. was the most influential author with only one publication published in 2018 and achieved 445 citations. The focused area for Dwivedi Y.K. was to explore the factors influencing AI adoption whereas Jarrahi M.H. focused on the integration of Human and machines in service context, thereby indicating that the productive author as well as an influential author was working in the key areas of AI. In addition, there was no article related to AI ethics in the top 10 cited authors list which indicates that though it is an emerging area but has traditionally been a neglected area.

In terms of contribution by countries, both developed and developing countries were contributing to the field in terms of impact on the field, but one of the developing countries (China) had the upper hand in both publications and citations. Therefore, based on the content analysis it can be argued that both developed and developing countries were working on similar themes by focusing on different industries. To increase the influence of their work, developed countries could explore and investigate the emerging area of AI with quantitative studies, and developing nations should concentrate on validating the ideas put forth by developed nations.

In the last stage of bibliometric analysis, the thematic mapping analysis revealed different clusters in four regions, each shedding light on different concepts and their intense within the field. The clusters identified in the first and second quadrants are closely related to the key area of factors affecting adoption intention of AI, as outlined in Table 3. In the third quadrant, one of the clusters highlights the emerging theme of consequences arising from the integration of humans and machines. Meanwhile, the fourth quadrant is linked to privacy concerns while using AI technologies, signifying the ethical perspective of AI. These key areas require further exploration in future research so that the emerging themes can gain more influence and pave the way for broader advancements within the field.

Future Directions

Based on the findings of the study,several gaps in the existing literature on AI adoptionemerge as potential future research areas. Firstly, future studies could examine the role of less-explored factors, namely, perceived anthropomorphism, perceived animacy, perceived intelligence, trust, risk, organizational fit, perceived value, service quality, customer satisfaction, customer value, and personal concerns. These factors can be exploredacross different sectorsto comprehend how they influence the acceptance of AI-based technologies from the perspective of customers as well as employees.

Secondly, to establish additionalstudiesthat willfocus on the symbiotic relationship between humans and technology. These studiesshould comprehensivelyexamine both positive and negative consequences to get substantial influence within the field.

Thirdly, the prospect of longitudinal studies over the cross-sectional studies could be pursued, with varying levels of analysis (industry, organization, and individual) to comprehensively investigate the drivers of AI adoption.

Fourth, by addressingthe gap between developing and developed countries, future researchers could undertake cross-cultural quantitative studies so that their generalizability increases.

Fifth, the application of AI and its ethics to reduce the potential dark sides within marketing domain constitute a distinct emerging research area.This particular aspect of consequences of AI has yet to receive comprehensive attention and offers a rich area for future investigation.

Limitations

Despite the various theoretical implications of the study, the present study has some limitations about its methodology. First, the data for the study was retrieved only from the Scopus database. Although the usage of Scopus in the present study has been justified, there may be chances of missing some articles that have been published in journals that are indexed in other databases such as Web of Science and EBSCO. Therefore, future reviews on AI should try to incorporate the articles published in these journals to support or refute the findings of the present review. Second, the present study reviewed only those publications that are in the form of articles. Consequently, other forms of publications, such as conference papers and book chapters, which may be significant sources of the literature, were excluded from the study.

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