

CYBERSECURITY AS THE CATCHER IN THE RYE: GUIDING MARKETING RESEARCH THROUGH A COMPARATIVE SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC ANALYSES

6

Nuria Recuero Virto

Universidad Complutense de Madrid, Spain

Abstract | This paper presents the first comprehensive review of the literature on cybersecurity within the disciplines of marketing and tourism marketing, offering a comparative analysis of how cybersecurity is conceptualised, discussed, and researched across these fields. Using two systematic literature reviews and bibliometric analyses, the study evaluates the current state of cybersecurity research, identifying key themes, gaps, and emerging trends. The findings reveal a significant lack of awareness regarding the implications of cybersecurity in marketing and tourism contexts. Results show fragmented approaches, limited conceptual clarity, and a scarce integration of cybersecurity issues in marketing theory and practice. Moreover, the analysis underscores the growing interdisciplinary relevance of cybersecurity, linking it to managerial competencies, data-driven decision-making, and consumer trust. The study highlights how cybersecurity has become not only a technological necessity but also a strategic marketing concern affecting brand reputation, customer experience, and digital communication. By bridging marketing and tourism marketing perspectives, this research contributes to both academic and professional fields, fostering a deeper understanding of how cybersecurity intersects with digital transformation, consumer protection, and ethical responsibility. Finally, it proposes future research avenues, including the examination of the psychological effects of cybersecurity on consumer behaviour and the development of personalised cybersecurity services supported by the Internet of Behaviour. Through this comprehensive analysis, the study establishes cybersecurity as an essential frontier for advancing marketing research and practice in an increasingly digital and vulnerable environment.

Keywords | Cybersecurity, Blockchain, Biometrics, Tourism marketing

1. Introduction

Cybersecurity is increasingly critical in business and society, with blockchain and biometrics emerging a popular protective systems (Schlatt et al., 2023; Sule et al., 2021). It involves safeguarding various resources, such a financial data, usernames, passwords, and documents, from a multitude of threats. While cyberattacks come in various forms, personalized attacks, often due to human error, are frequent. Hence, defending computer systems against such threats is crucial for ensuring authorized access while preserving data confidentiality and integrity. Preventing and quickly addressing breaches are vital not only for mitigating cyber risks but also for enhancing consumer satisfaction and loyalty. As every online user leaves a digital trace, prioritizing cybersecurity measures can significantly contribute to fostering trust and confidence among consumers. With cyberattacks on the rise across industries, including vital sectors like the food industry, automated vehicles, and smart homes, protecting systems and data remains imperative for the global economy's resilience (Alqudhaibi et al., 2024; Douha et al., 2023; Khalid Khan et al., 2023).

This study seeks to conduct a comparative investigation by performing two systematic literature reviews (SLRs) and two bibliometric analyses. The aim of this study is to thoroughly examine the body of research on cybersecurity and tackle the obstacles hindering the advancement of the discipline, which include: (1) limited awareness of the impact of cybersecurity on marketing research; (2) uncertainties surrounding themes in cybersecurity for marketing and tourism; and (3) inadequate comprehension of publication trends in cybersecurity within marketing and tourism marketing.

As a result, this research aims to answer the following research questions (RQs):

(RQ1) Is there a growing interest in understanding the impact of cybersecurity on marketing?

(RQ2) What are the primary themes in cybersecurity relevant to marketing and tourism?

(RQ3) What are the current publication trends in cybersecurity concerning marketing and tourism?

This study provides both academic and managerial contributions by establishing strong foundations for cybersecurity. It suggests a comprehensive and comparative

analysis of research conducted on cybersecurity in the domains of marketing and tourism marketing.

2. Methodological approach

9

Two SLRs were conducted, alongside two bibliometric analyses, focusing on cybersecurity within marketing and tourism marketing. These methods, SLR and bibliometric analysis, are highly relevant approaches for conducting literature reviews in scientific research (Cano-Marin et al., 2023).

SLR was selected to achieve several objectives: (1) ensuring the quality of the literature review and analysis findings; (2) examining a wide range of articles; (3) reducing potential biases and errors; (4) guaranteeing validity and transparency to enable the replication of the analyses; (5) consolidating existing literature and organizing search data within the research domains; and (6) offering theoretical and managerial insights (Chaudhuri et al., 2023). Additionally, SLR is essential when the research topic is narrowly defined, assisting in understanding the current state of the topic and ensuring the study's relevance within its context (Deepa et al., 2024).

The SLR process was conducted following five sequential steps, which were adapted from the PRISMA methodology. PRISMA includes four primary stages: identification, screening, eligibility, and inclusion (Moreno-Lobato et al., 2023).

2.1 Step 1: Research Focus

Figure 1 presents the five stages, which begin with the first step of question formulation (Beloskar et al., 2024).

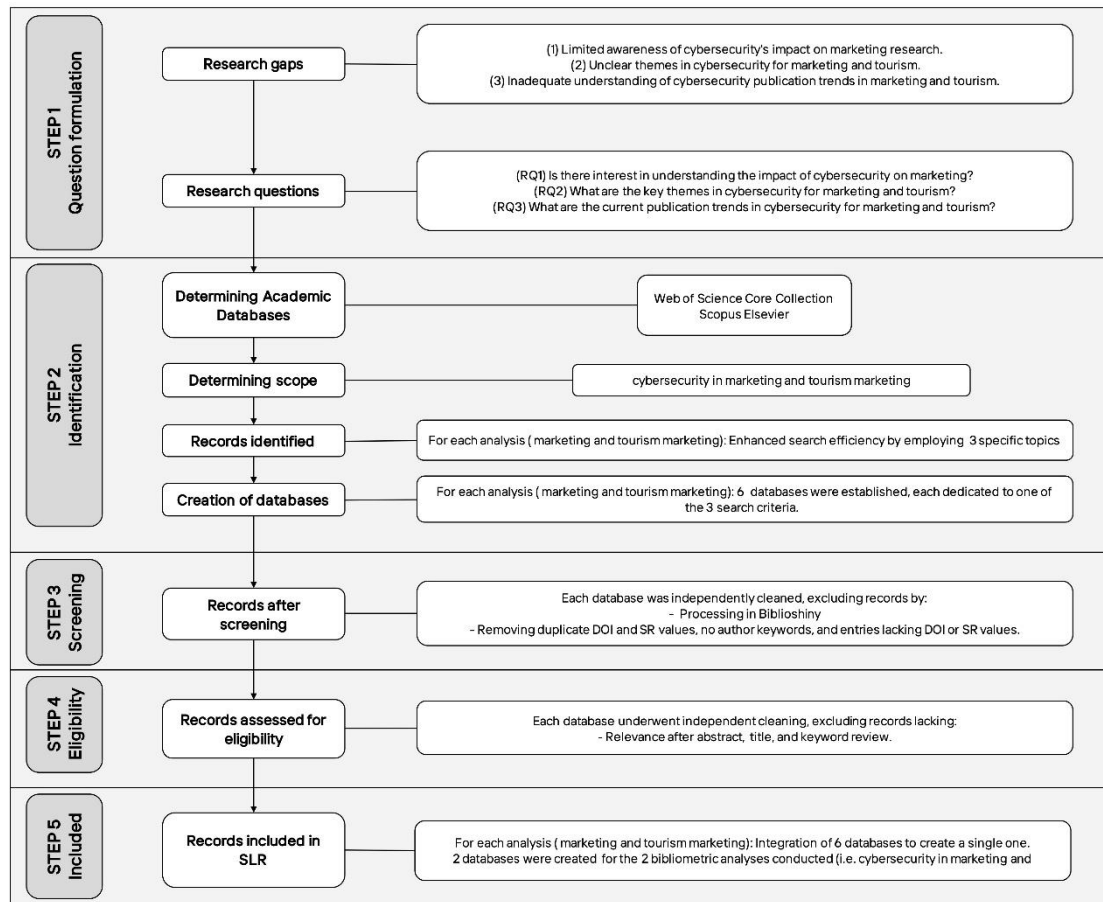


Figure 1. General framework of the research and the methodology employed.

Source: The author.

2.2 Step 2: Identification

The identification step is the second phase where specific databases are designated and the Boolean operators are outlined to recognize significant articles (Deepa et al., 2024; Moreno-Lobato et al., 2023). The bibliometric analyses were performed using the Web of Science (WoS) and Scopus databases.

The decision criteria used for the bibliometric analyses conducted was based on related studies (Beloskar et al., 2024; Liu & Avello, 2021; Kaur, 2024; Novitzky et al., 2023). Table 1 shows the Boolean criteria strategy used for each of the two bibliometric analyses performed, i.e., cybersecurity in marketing and in tourism marketing. These searches were realized on the 9th of April 2024. The keywords used were cybersecurity, blockchain and biometrics. In addition, for the bibliometric study in marketing, the

keywords “consumer, user, marketing, brand, or advertisement” were incorporated. For the analysis in the tourism marketing domain, the keyword “tourism” was included.

For the bibliometric studies, the inclusion criteria were demarcated on the document type, which was restricted to articles, and the language, which was English. The inclusion criteria regarding WoS categories and Scopus subject areas are presented in Table 1 for both bibliometric analyses. The difference between the two analyses concerning this inclusion criteria lies in the bibliometric study focusing on cybersecurity in tourism marketing, where an additional WoS category, namely hospitality, leisure, sport, and tourism, was included (Moreno-Lobato et al., 2023).

Table 2 reveals the number of records achieves after conducting searches using the keywords (i.e., cybersecurity, blockchain and biometric) in both the marketing and tourism marketing fields. This process resulted in the creation of six databases, each dedicated to one of the three search criteria.

Table 1. Decision criteria

Criteria	Cybersecurity in marketing		Cybersecurity in tourism	
	<i>Web of Science Core Collection</i>	<i>Scopus Elsevier</i>	<i>Web of Science Core Collection</i>	<i>Scopus Elsevier</i>
Meta Search	<i>Topic:</i>	<i>Title, abstract, keywords:</i>	<i>Topic:</i>	<i>Title, abstract, keywords:</i>
	The following words were used in the searches:		The following words were used in the searches:	
	(1) cybersecurity AND consumer* OR user* OR marketing* OR brand* OR advertisement*		(1) cybersecurity AND tourism	
	(2) blockchain AND consumer* OR user* OR marketing* OR brand* OR advertisement*		(2) blockchain AND tourism	
	(3) biometric* OR biometrics* AND consumer* OR user* OR marketing* OR brand* OR advertisement*		(3) biometric* OR biometrics* AND tourism	
Inclusion Criteria	<i>Document Type:</i> Article	<i>Document Type:</i> Article	<i>Document Type:</i> Article	<i>Document Type:</i> Article
	<i>Language:</i> English	<i>Language:</i> English	<i>Language:</i> English	<i>Language:</i> English
	Web of Science Categories: Behavioural Science; Business; Communication; Management; Social sciences, interdisciplinary	Subject area: Business, Management and Accounting; Social Sciences; Economics, Econometrics and Finance	Web of Science Categories: Behavioural Science; Business; Communication; Hospitality, Leisure, Sport & Tourism; Management; Social sciences, interdisciplinary	Subject area: Business, Management and Accounting; Social Sciences; Economics, Econometrics and Finance

Source: The author.

Table 2. Number of articles within databases scope (without filtering): Distribution per source

Database regarding cybersecurity in marketing	cybersecurity	blockchain	biometrics
Web of Science Core Collection	175	686	204
Scopus Elsevier	549	1198	569
Total	724	1884	773
Database regarding cybersecurity in tourism marketing	cybersecurity	blockchain	biometrics
Web of Science Core Collection	3	62	5
Scopus Elsevier	8	110	14
Total	11	172	19

Source: The author.

12

2.3 Step 3: Screening

The third stage entailed deleting duplicate articles in each of the databases, which were independently cleaned. This involved employing Biblioshiny for processing and deleting duplicate DOI and SR values, no author keywords, and entries lacking DOI or SR values (Cano-Marin et al., 2023; Kaur, 2024). Tables 3 and 4 illustrate the records results after these two procedures.

Table 3. Number of articles within databases scope: After processing in Biblioshiny

Database regarding cybersecurity in marketing	cybersecurity	blockchain	biometrics
Web of Science Core Collection	175	686	204
Scopus Elsevier	547	1172	569
Total	722	1858	773
Database regarding cybersecurity in tourism marketing	cybersecurity	blockchain	biometrics
Web of Science Core Collection	3	62	5
Scopus Elsevier	8	109	14
Total	11	171	19

Source: The author.

Table 4. Number of articles within databases scope: After deleting missing DOI values, duplicates DOI values, duplicates or no SR values and no author keywords

Merged database: Web of Science Core Collection and Scopus Elsevier	cybersecurity	blockchain	biometrics
Database regarding cybersecurity in marketing	626	1478	577
Database regarding cybersecurity in tourism marketing	7	96	12

Source: The author.

2.4 Step 4: Eligibility

During this stage, each database experienced independent cleaning, excluding records lacking relevance after abstract, title, and keyword review (Cano-Marín et al., 2023).

2.5 Step 5: Included

A new revision of duplicate DOI and SR values was conducted in the merged databases. After this process, a total sample of 122 records was achieved for cybersecurity in marketing, while 8 records were collected for cybersecurity in tourism marketing, as presented in Table 5. The sample sizes employed in this research were considered suitable, as these were like the sample sizes conducted recently in related studies (Chaudhuri et al., 2023; Moreno-Lobato et al., 2023).

Table 5. Number of articles within databases scope: After excluding records lacking relevance after abstract, title, and keyword review and after deleting duplicates in the merged database

Databases: Web of Science Core Collection and Scopus Elsevier	Cybersecurity	blockchain	biometrics	Total
Database regarding cybersecurity in marketing	43	77	2	122
Database regarding cybersecurity in tourism marketing	0	4	4	8

Source: The author.

The last stage involved performing the bibliometric analyses using various software tools. These tools comprised Biblioshiny, which is a popular graphical interface of the Bibliometrix R package in contemporary bibliometric research (Beloskar et al., 2024; Makaya et al., 2023; Oludapo et al., 2024). Additionally, Tableau and Microsoft Excel were utilized for analysis and visualization purposes (Alhashmi et al., 2024; Del Gesso et al., 2024).

Table 6 provides a summary of key bibliometric metrics. The sampled articles were published between 2010 and 2024 in both fields. While the marketing field shows an annual growth rate of 21.9%, there is no growth rate observed in the field of tourism marketing. The average citation per document is nearly identical in both fields, with 11.48 citations in marketing and 11.38 citations in tourism marketing.

Table 6. Study sample characteristics

Description	Results: cybersecurity in marketing	Results: cybersecurity in tourism marketing
Timespan	2010:2024	2010:2024
Documents	123	8
Annual Growth Rate %	21,9	0
Document Average Age	2,26	4,12
Average citations per doc	11,48	11,38
Authors	385	27
Authors of single-authored docs	13	0
Co-Authors per Doc	3,33	3,38
International co-authorships %	12,2	50

Source: The author.

3. Descriptive Analysis of the Literature

3.1 Articles Per Year and Country Location

Since the initial cybersecurity articles were released in 2010, research activity remained minimal in both domains until nearly 2021 (see Table 7). Price's Index indicates the proportion of references that are less than five years old (Gong, 2023; Price, 1970). Up to April 2024, the findings reveal a Price's Index of 89.4% in the marketing field and 75% in tourism marketing. With these high Price's Index values (Liu & Avello, 2021), cybersecurity is recognized as an innovative research domain.

It is commonly observed that the progression of a scientific discipline follows an exponential growth pattern, doubling in size approximately every 10 to 15 years (Price, 1963). The evolution of a scientific field typically involves four stages: the precursor phase, characterized by early foundational work; the exponential growth period, marked by rapid expansion; the consolidation of knowledge, where the field's foundational principles are established; and finally, the decline in production stage, where growth slows down as the field matures.

Figure 2 indicates that research in both domains is currently in its precursor phase (Liu & Avello, 2021). However, it remains to be seen how cybersecurity will evolve, particularly given the significant growth observed between 2022 and 2023, with 64 articles published in marketing and 4 in tourism marketing.

Table 7. Frequency of publication of articles related to cybersecurity in marketing and in tourism marketing per year

Year	Frequency in marketing	Percentage in marketing	Cumulative relative frequency in marketing	Frequency in tourism marketing	Percentage in tourism marketing	Cumulative relative frequency in tourism marketing
2010	1	0,8%	0,22%	1	13%	12,5%
2011	0	0%	0,22%	0	0%	0%
2012	1	0,8%	0,29%	0	0%	0%
2013	0	0%	0,36%	0	0%	0%
2014	0	0%	0,44%	1	13%	13%
2015	0	0%	0,94%	0	0%	0%
2016	0	0%	0,94%	0	0%	0%
2017	0	0%	1,67%	0	0%	0%
2018	3	2,4%	3,77%	0	0%	0%
2019	8	6,5%	7,54%	0	0%	0%
2020	12	9,8%	10,37%	0	0%	0%
2021	18	14,6%	15,45%	1	13%	12,5%
2022	28	22,8%	19,43%	2	25%	25%
2023	36	29,3%	28,21%	2	25%	25%
2024	16	13%	9,43%	1	13%	12,5%

Source: The author.

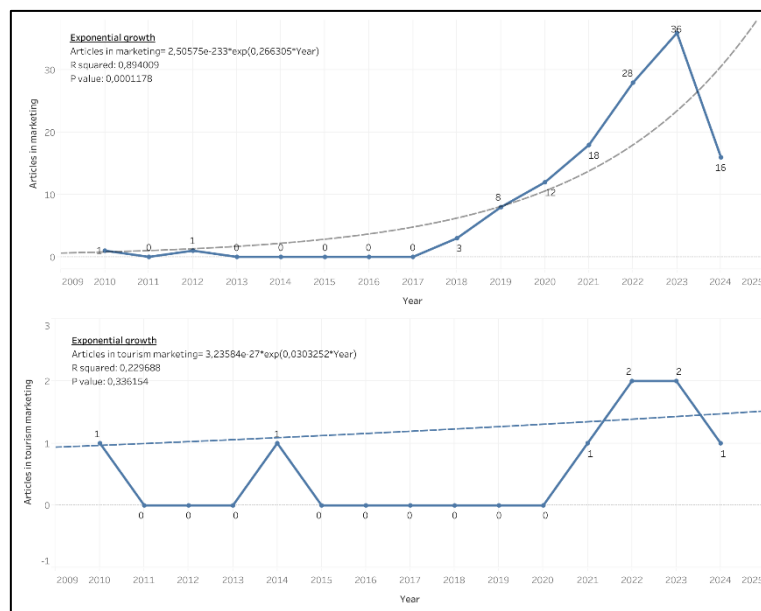


Figure 2. Growth of scientific production

Source: The author.

Most of the research on cybersecurity comes from the United States, as shown in Figures 3 and 4. In marketing, the top countries are the United States (40), China (23),

the United Kingdom (19), India (14), and Australia (9). For tourism marketing, the main contributors are the United States (3), the United Kingdom (3), South Africa (2), and the United Arab Emirates (2). Figure 3 also reveals that cybersecurity research is growing in developing countries, indicating a need for more studies in these areas (Albahari et al., 2022).

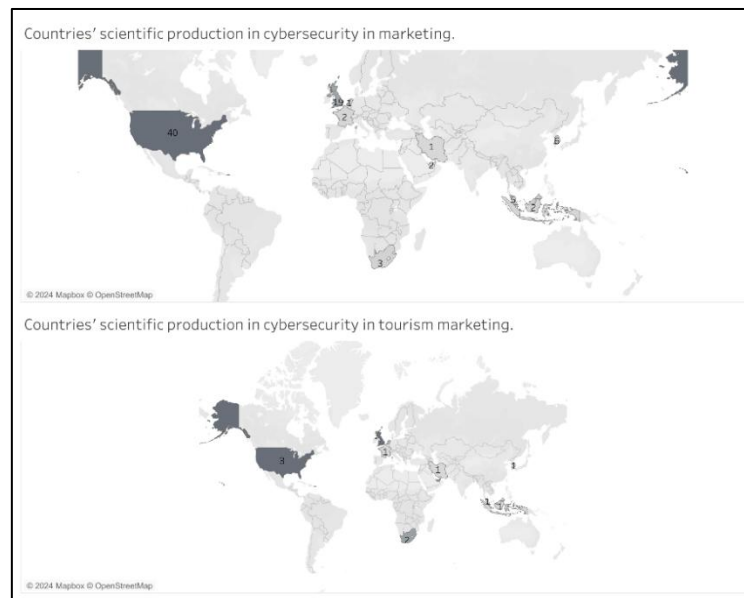


Figure 3. Countries' scientific production in cybersecurity in marketing and in tourism marketing

Source: The author.

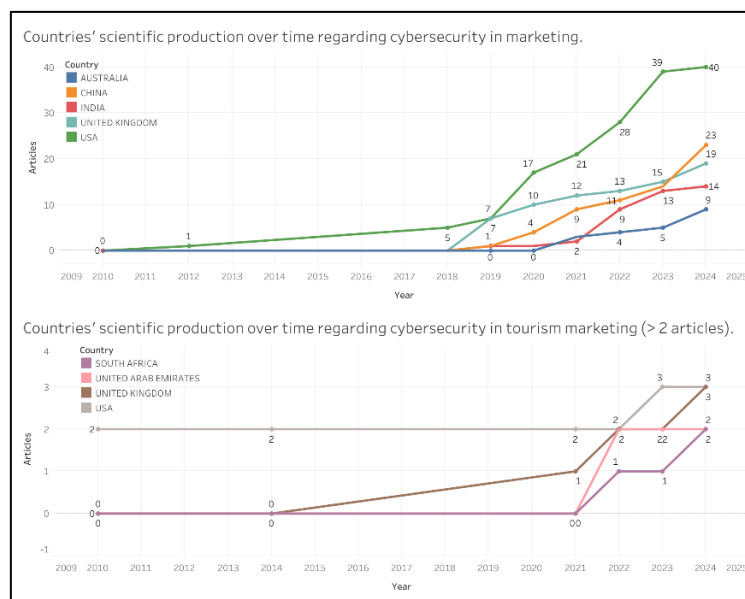


Figure 4. Countries' scientific production over time

Source: The author.

3.2 Central topics examined and research lines

3.2.1 Keywords.

Analysing the frequency of keyword appearances provides insights into the main topics covered (Chaudhuri et al., 2023; Kaur, 2024; Liu & Avello, 2021). However, cybersecurity in tourism has not been subjected to this analysis, as only eight articles were available for examination, rendering such analysis impossible. In the marketing field, the terms “blockchain” and “cybersecurity” were the most frequently employed, which aligns with the records gathered during the SLR process in stage 4 (77 for blockchain and 43 for cybersecurity) (Tables 5 and 8). Additionally, other terms such as “technology adoption”, “user acceptance”, and “trust” were frequently mentioned, indicating prevalent research themes.

“perception”, and “impact” appear as the top five most frequently mentioned concepts across both domains.

As illustrated in the word cloud (Figure 5), many of these terms are linked to aspects of the decision-making process, such as trust, models, and theories related to technology acceptance (see Figure 8). The tree map shown in Figure 6 visually represents the data from Table 8, highlighting additional topics explored in cybersecurity within the marketing domain. For example, keywords such as “ecolabeling” and “transparency” have emerged.

Table 8. Frequency of occurrence of cybersecurity in marketing keywords (>4 times)

Keywords	Frequency	Percentage
blockchain	26	17,45%
cybersecurity	25	16,78%
technology adoption	8	5,37%
trust	8	5,37%
user acceptance	8	5,37%
behavioural research	7	4,70%
model	7	4,70%
social media	7	4,70%
information-technology	6	4,03%
marketing	6	4,03%
technology acceptance model	6	4,03%
impact	5	3,36%

information	5	3,36%
social networking (online)	5	3,36%
innovation	4	2,68%
perceived risk	4	2,68%
perception	4	2,68%
security	4	2,68%
transparency	4	2,68%

Source: The author.



Figure 5. Cybersecurity in marketing keywords co-occurrence network in word cloud format

Source: The author.



Figure 6. Cybersecurity in marketing keywords co-occurrence network in tree map format

Source: The author.

3.2.2 Co-word analysis.

Biblioshiny generated the correlation network maps in the marketing field, as shown in Figure 7, while there were insufficient records to create a correlation network for the tourism marketing domain. Figure 7 reveals that the marketing domain is comprised of five clusters. To comprehend the correlation network map between keywords, nodes of the same colour form a cluster, and the closer proximity between nodes within the same cluster indicates a stronger relationship (Haba et al., 2023; Kaur, 2024; Liu & Avello, 2021).

In the marketing domain (Figure 7), Cluster 1, the orange network labelled “Cyber-crimes”, centres on the relationship between cybersecurity and crimes, encompassing aspects such as computer crimes, data security, internet security, and the unified theory of acceptance and use of technology (UTAUT). Cluster 2, represented by the green network titled “Behavioural responses”, includes themes related to user acceptance, perceived risk, computer self-efficacy, and the technology acceptance model. Cluster 3, shown by the purple network labelled “Innovation”, covers topics related to information and its impact. Cluster 4, the red network, named “Technology adoption”, encompasses various themes such as banking, security, ecolabeling, perception, and sustainable development. Cluster 5, the blue network titled “Social media trust”, focuses more on transparency, trust, social networks, and their economic and social effects.

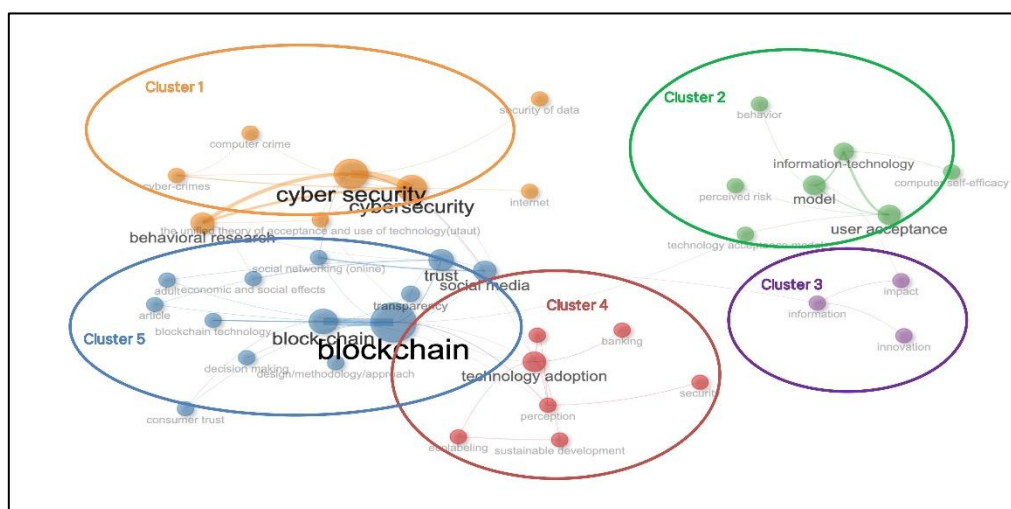


Figure 7. Cybersecurity in tourism marketing correlation map between keywords

Source: The author.

3.2.3 Thematic maps.

Biblioshiny generates thematic maps using authors' keywords as the units of analysis to reveal critical themes (Oludapo et al., 2024). These thematic maps are interpreted based on centrality, enlightening their significance, and density, representing their growth, of various research themes (Kaur, 2024).

Figure 8 illustrates the cybersecurity thematic map within the marketing domain, highlighting themes such as “cybersecurity” and “behavioural research” as fundamental topics relevant to research. Themes like “electronic commerce”, “government”, “risk perception”, and “awareness” show a declining trend. In contrast, themes such as “security of data”, “consumer trust”, “design/methodology/approach”, “behaviour”, “decision”, and “management” are emerging themes with limited representation but rapid growth. Additionally, “trust”, “transparency”, “the unified theory of acceptance and use of technology (UTAUT)”, “technology adoption”, “user acceptance model”, “information technology”, and “technology adoption” represent the central themes driving research in the field.

Hence, scholars are encouraged to continue developing these central themes in both domains, namely marketing and tourism marketing, considering their significance and potential for future cybersecurity research.

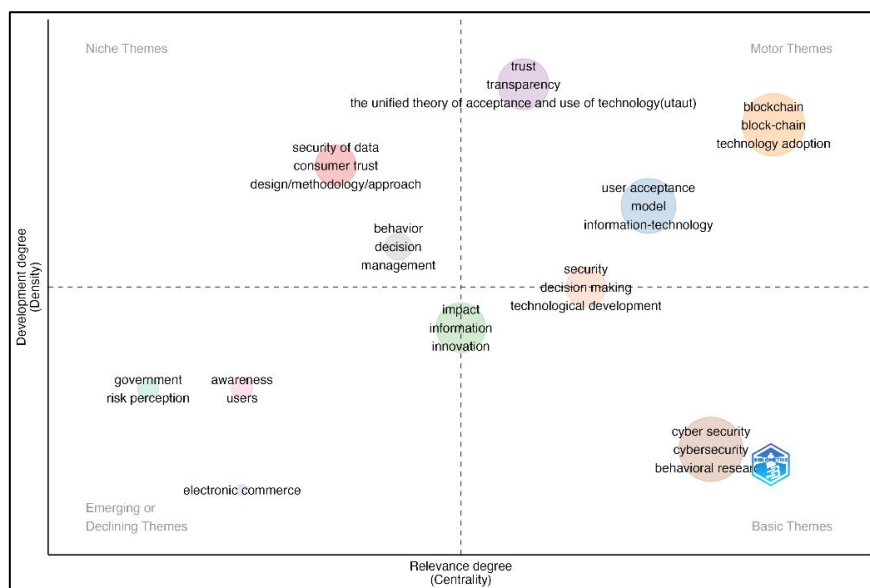


Figure 8. Thematic strategic map for cybersecurity in marketing

Source: The author.

3.2.4 Scientific scope.

3.2.4.1 Most productive and influential journals.

The significance of journals was assessed based on the number of articles they published and their citation counts (Bengoa et al., 2023; Liu & Avello, 2021). Table 9 provides details on the most influential journals that have published more than 2 articles on cybersecurity within marketing, from a sample of 122 records. Table 10 presents information on all the journals that have published articles on cybersecurity in tourism marketing, based on a smaller sample of 8 records.

Regarding cybersecurity within marketing, the journals with the highest number of articles include Technological Forecasting and Social Change (6 articles), Sustainability (4 articles), and Technology in Society (4 articles), all focusing strongly on business marketing (see Table 9). Notably, the Journal of Cybersecurity is absent, and none of the 122 articles in the sample were published in this journal.

In tourism marketing, the journals with the highest number of articles are Information Technology and Tourism (3) and Journal of Hospitality and Tourism Technology (2) (refer to Table 10).

Table 9. Top journals regarding the number of articles published concerning cybersecurity in marketing (>2 articles)

Sources	NA April 2024	TC 2022	TCA 2022	JCR 2022	JCR edition	JCR category	JIF quartile 2022	JIF rank 2022
Technological Forecasting and Social Change	6	41,192	7	12	(SSCI)	REGIONAL & URBAN PLANNING - SSCI; BUSINESS - SSCI	Q1; Q1	11/154; 2/40
Sustainability (Switzerland)	4	187,953	2	3.9	(SSCI)	ENVIRONMENTAL STUDIES - SSCI; GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY - SSCI	Q2; Q2	48/128; 5/9
Technology in Society	4	9,254	5.5	9.2	(SSCI)	SOCIAL ISSUES - SSCI; SOCIAL SCIENCES, INTERDISCIPLINARY - SSCI	Q1; Q1	3/44; 1/110
Computers and Security	3	10,169	3	5.6	(SCIE)	COMPUTER SCIENCE, INFORMATION SYSTEMS - SCIE	Q2	41/158
Foods	2	38,071	3	5.2	(SCIE)	FOOD SCIENCE & TECHNOLOGY - SCIE	Q1	34/142

Human Behaviour and Emerging Technologies	2	1,767	2	10.3	(ESCI)	PSYCHOLOGY, MULTIDISCIPLINARY - ESCI	Q1	13/215
Human Factors	2	8,783	2	3.3	(SSCI); (SCIE)	ERGONOMICS - SSCI; PSYCHOLOGY, APPLIED - SSCI; PSYCHOLOGY - SCIE; BEHAVIORAL SCIENCES - SCIE; ENGINEERING, INDUSTRIAL - SCIE	Q2; Q2; Q2; Q2; Q2	7/16; 37/83; 27/81; 14/52; 24/50
Information Communication and Society	2	7,578	2	4.2	(SSCI)	COMMUNICATION - SSCI; SOCIOLOGY - SSCI	Q1; Q1	19/96; 15/149
Issues in Information Systems ¹	2	*	*	*	*	*	*	*
Journal of Business Research	2	68,574	6	11.3	(SSCI)	BUSINESS - SSCI	Q1	14/154
Journal of Computer Information Systems	2	2,483	1	2.8	(SCIE)	COMPUTER SCIENCE, INFORMATION SYSTEMS - SCIE	Q3	102/158
Journal of Financial Reporting and Accounting	2	861,000	1	2.5	(ESCI)	BUSINESS, FINANCE - ESCI	Q2	83/230
Journal of Retailing and Consumer Services	2	20,489	7	10.4	(SSCI)	BUSINESS - SSCI	Q1	19/154
Note: NA number of articles, TC total cites, TCA total cites per article, JCR Journal Citation Reports Impact, JIF Journal Impact Factor.								
* These journals lack impact in the JCR 2022								
¹ Issues in Information Systems is indexed in the Scimago Journal & Country Rank under the subject area of Business, Management, and Accounting, specifically in the Business, Management and Accounting (miscellaneous) category, with an h-index of 8 and placed in the Q4 tier.								

Source: The author.

Table 10. Journals that have published articles regarding cybersecurity in tourism marketing

Sources	NA April 2024	TC 2022	TCA 2022	JCR 2022	JCR edition	JCR category	JIF quartile 2022	JIF rank 2022
Information Technology and Tourism	3	1,019	4	9.3	(SSCI)	HOSPITALITY, LEISURE, SPORT & TOURISM - SSCI	Q1	8/58
Journal Of Hospitality and Tourism Technology	2	1,733	4	4.7	(SSCI)	HOSPITALITY, LEISURE, SPORT & TOURISM - SSCI	Q2	21/58
Cornell Hospitality Quaterly	1	2,046	2	3.5	(SSCI)	HOSPITALITY, LEISURE, SPORT & TOURISM - SSCI; SOCIOLOGY - SSCI; MANAGEMENT - SSCI	Q3; Q1; Q3	31/58; 25/149; 148/227
Current Issues In Tourism	1	11,548	4	8	(SSCI)	HOSPITALITY, LEISURE, SPORT & TOURISM - SSCI	Q1	14/58
Journal of Travel Research	1	13,84	6	8.9	(SSCI)	HOSPITALITY, LEISURE, SPORT & TOURISM - SSCI	Q1	10/58
Note: NA number of articles, TC total cites, TCA total cites per article, JCR Journal Citation Reports Impact, JIF Journal Impact Factor.								

Source: The author.

3.2.4.2 Most cited articles.

Analysing the most cited articles within a discipline provides valuable insights into the literature considered most significant by the research community. The number of citations serves as a key indicator of both influence and attention within the scientific community. It is important to note that the articles listed in Tables 11 and 12 were retrieved on April 9, 2024. While the articles remain the same upon repeated searches, the number of citations may vary as new citations accumulate over time (Bengoa et al., 2023; Liu & Avello, 2021).

Table 11 showcases articles on cybersecurity in marketing that have garnered more than 29 citations, along with their citation counts and the percentage of citations per year. Specifically, three articles have accrued more than 50 citations, a relatively modest number compared to more established fields of research. The most cited article, with 139 citations, explores the perceived benefits of blockchain in banking (Garg et al., 2021),

Table 12 reveals that only two articles received over 20 citations, related to privacy concerns (Ioannou et al., 2020) and blockchain in the tourism industry (Balasubramanian et al. 2022).

Table 11. Articles published concerning cybersecurity in marketing (>29 cites)

Authors	Year	Title	Journal	TC	TC per year	Normalized TC	DOI
Garg, P., Gupta, B., Chauhan, A. K., Sivarajah, U., Gupta, S., & Modgil, S.	2021	Measuring the perceived benefits of implementing blockchain technology in the banking sector.	Technological Forecasting and Social Change	139	34,75	7,30	10.1016/j.techfore.2020.120407
Violino, S., Pallottino, F., Sperandio, G., Figorilli, S., Antonucci, F., Ioannoni, V., Fappiano, D., & Costa, C.	2019	Are the innovative electronic labels for extra virgin olive oil sustainable, traceable, and accepted by consumers?	Foods	55	9,17	3,86	10.3390/foods8110529
Steinmetz, F., von Meduna, M., Ante, L., & Fiedler, I.	2021	Ownership, uses and perceptions of cryptocurrency: Results from a population survey.	Technological Forecasting and Social Change	51	12,75	2,68	10.1016/j.techfore.2021.121073
Liang, T. P., Kohli, R., Huang, H. C., & Li, Z. L.	2021	What drives the adoption of the blockchain technology?	Journal of Management	49	12,25	2,57	10.1080/07421222.2021.1912915

		A fit-viability perspective.	Information Systems				
Dodel, M., & Mesch, G.	2018	Inequality in digital skills and the adoption of online safety behaviors.	Information, Communication & Society	47	6,71	3,39	10.1080/1369118X.2018.1428652
Liu, N., & Ye, Z.	2021	Empirical research on the blockchain adoption – based on TAM.	Applied Economics	46	11,50	2,42	10.1080/0036846.2021.1898535
Tan, T. M., & Saraniemi, S.	2022	Trust in blockchain-enabled exchanges: Future directions in blockchain marketing.	Journal of the Academy of Marketing Science	45	24,00	11,77	10.1007/s11747-022-00889-0
Alawadhi, M., Almazrouie, J., Kamil, M., & Khalil, K. A.	2020	A systematic literature review of the factors influencing the adoption of autonomous driving.	International Journal of System Assurance Engineering and Management	45	9,00	1,23	10.1007/s13198-020-00961-4
Furman, S., Theofanos, M. F., Choong, Y. Y., & Stanton, B.	2012	Basing cybersecurity training on user perceptions.	IEEE Security & Privacy Magazine	44	3,38	1,00	10.1109/MS.P.2011.180
Hanif, Y., & Lallie, H. S.	2021	Security factors on the intention to use mobile banking applications in the UK older generation (55+). A mixed-method study using modified UTAUT and MTAM - with perceived cyber security, risk, and trust.	Technology in Society	35	8,75	1,84	10.1016/j.techsoc.2021.101693
Shao, Z., Zhang, L., Brown, S. A., & Zhao, T.	2022	Understanding users' trust transfer mechanism in a blockchain-enabled platform: A mixed methods study.	Decision Support Systems	34	11,33	4,12	10.1016/j.dss.2021.113716
Arli, D., van Esch, P., Bakpayev, M., & Laurence, A.	2020	Do consumers really trust cryptocurrencies?	Marketing Intelligence & Planning	34	8,50	1,79	10.1108/MIP-01-2020-0036
Boukis, A.	2019	Exploring the implications of blockchain technology for brand-consumer relationships: a future research agenda.	Journal of Product & Brand Management	33	6,60	0,90	10.1108/JPBM-03-2018-1780
Jena, R. K.	2022	Examining the factors affecting the adoption of blockchain technology in the banking sector:	International Journal of Financial Studies	30	10,00	3,63	10.3390/ijfs10040090

		An extended UTAUT Model.					
Sciarelli, M., Prisco, A., Gheith, M. H., & Muto, V.	2021	Factors affecting the adoption of blockchain technology in innovative Italian companies: an extended TAM approach.	Journal of Strategy and Management	30	10,00	3,63	10.1108/JSMA-02-2021-0054

Note: TC total cites. Data extracted from Biblioshiny analysis.

Source: The author.

Table 12. Articles published concerning cybersecurity in tourism marketing

Authors	Year	Title	Journal	TC	TC per year	Normalized TC	DOI
Ioannou, A., Tussyadiah, I., & Miller, G.	2020	That's private! Understanding travelers' privacy concerns and online data disclosure.	Journal of Travel Research	23	5,75	0,83	10.1177/0047287520951642
Balasubramanian, S., Sethi, J. S., Ajayan, S., & Paris, C. M.	2022	An enabling framework for blockchain in tourism.	Information Technology & Tourism	21	7,00	0,99	10.1007/s40558-022-00229-6
Dadkhah, M., Rahimnia, F., & Filimonau, V.	2022	Evaluating the opportunities, challenges and risks of applying the blockchain technology in tourism: a Delphi study approach.	Journal of Hospitality and Tourism Technology	15	5,00	0,83	10.1108/JHTT-04-2021-0115
Mills, J. E., Meyers, M., & Byun, S.	2010	Embracing broadscale applications of biometric technologies in hospitality and tourism.	Journal of Hospitality and Tourism Technology	10	0,67	1,00	10.1108/17579881011078377
Neo, H. F., Rasiah, D., Tong, D. Y. K., & Teo, C. C.	2014	Biometric technology and privacy: a perspective from tourist satisfaction.	Information Technology & Tourism	9	0,82	1,00	10.1007/s40558-014-0014-8
Lehto, X. Y., Park, S., Mohamed, M. E., & Lehto, M. R.	2021	Traveler attitudes toward biometric data-enabled hotel services: Can risk education play a role?	Cornell Hospitality Quarterly	6	3,00	1,33	10.1177/19389655211063204
Muharam, I. N., Tussyadiah, I. P., & Kimbu, A. N.	2023	A theoretical model of user acceptance of blockchain-based peer-to-peer accommodation.	Current Issues in Tourism	4	4,00	1,00	10.1080/13683500.2022.2164485

Corne, A., Massot, V., & Merasli, S.	2023	he determinants of the adoption of blockchain technology in the tourism sector and metaverse perspectives.	Information Technology & Tourism	3	1,50	0,67	10.1007/s40558-023-00263-y
--	------	--	--	---	------	------	----------------------------

Source: The author.

3.2.4.3 Most used research methods.

Research methods facilitate the systematic collection and analysis of real-world data, thereby contributing to the advancement of scientific knowledge (Liu & Avello, 2021). Table 13 illustrates that most studies in both marketing and tourism marketing are empirical, accounting for 82% and 75%, respectively. These empirical studies primarily utilize quantitative methods in marketing (88%), with surveys being the most employed data collection procedure in both domains.

Table 13. Frequency of publication of articles related to cybersecurity in marketing and in tourism marketing per year

	cybersecurity in marketing			cybersecurity in tourism marketing	
	Frequency	Percentage		Frequency	Percentage
Type of study (n=122)			Type of study (n=8)		
<i>Conceptual / review</i>	22	18%	<i>Conceptual / review</i>	2	25%
<i>Empirical</i>	100	82%	<i>Empirical</i>	6	75%
Research methodology (n=100)			Research methodology (n=6)		
<i>Qualitative</i>	6	6%	<i>Qualitative</i>	3	50%
<i>Quantitative</i>	88	88%	<i>Quantitative</i>	3	50%
<i>Mixed methods</i>	6	6%	<i>Mixed methods</i>		
Data collection method (n=100)			Data collection method (n=6)		
<i>Interviews/focus groups</i>	4	4%	<i>Interviews/focus groups</i>	1	17%
<i>Experiment</i>	4	4%	<i>Experiment</i>	0	0%
<i>Survey</i>	73	73%	<i>Survey</i>	4	67%
<i>Mixed data collection</i>	6	6%	<i>Mixed data collection</i>	0	0%
<i>Others</i>	13	13%	<i>Others</i>	1	17%
Data analysis technique (n=100)			Data analysis technique (n=6)		

<i>Co-variance and variance based SEM</i>	61	61%	<i>Co-variance and variance based SEM</i>	3	50%
<i>Qualitative content analysis</i>	6	6%	<i>Qualitative content analysis</i>	1	17%
<i>Bivariate</i>	1	1%	<i>Bivariate</i>	0	0%
<i>Multivariate</i>	6	6%	<i>Multivariate</i>	0	0%
<i>Other statistics</i>	26	26%	<i>Other statistics</i>	2	33%

Source: The author.

4. Conclusions

This study makes a substantial contribution to the growing field of research on cybersecurity in marketing and tourism marketing. One key contribution is the implementation of two SLRs along with two bibliometric analyses, enabling a comparative evaluation of cybersecurity evolutions in these two distinct fields. This section will examine the research questions in depth.

Various bibliometric indicators have been examined, including the distribution of publication years, Price's index, citation counts, publication sources, research areas, research methods, and co-occurring keywords, among others. The primary aim of this study was to explain the principal characteristics and trends in cybersecurity research across both marketing and tourism marketing domains. Research activity in cybersecurity has seen a notable increase since 2021, with 98 articles published in marketing and 6 articles published in tourism marketing. Additionally, the Price's index indicates a high level of recent publication activity, with 89.4% in the marketing field and 75% in tourism marketing. The marketing potential of cybersecurity represent a recent and growing phenomenon, justifying the increased intensity of scientific research in recent years. This suggests that research in this field is still in its early stages in both domains, particularly in tourism marketing. Similar to trends observed in other disciplines, the United States of America and the United Kingdom emerge as the most significant contributors, underscoring the need to foster cybersecurity research in other countries.

The observable trend in scholarly publications indicates an escalating interest in behavioural research pertinent to decision-making processes. A considerable body of literature is dedicated to examining behavioural research frameworks in cybersecurity, with a pronounced emphasis on domains such as trust, transparency, risk perception, user acceptance, UTAUT, and the technology acceptance model (TAM). The thematic

analysis of these clusters distinctly engages with the behavioural inclinations and consumers' perceptions (RQ2). Notably, the most cited article in marketing pertains to blockchain, correlated with the results merged for the blockchain records in the examined dataset (Garg et al., 2021). Correspondingly, in tourism marketing, the foremost cited article is also centred on blockchain (Balasubramanian et al., 2022) and another article addressing privacy concerns (Ioannou et al., 2020) (RQ3). Consequently, it is advisable for researchers to further advance these key themes within both spheres.

Empirical research predominates in this discipline, with quantitative methodologies being mainly employed. Nevertheless, differences exist in data collection procedures and analytical analyses across the two domains. In marketing, empirical studies heavily rely on quantitative methods, with surveys emerging as the principal data collection procedure in both fields. A new avenue for research within biometric cybersecurity systems lies in examining users' behavioural reactions through facial recognition, a pioneering yet underexplored tool in market research (Srivastava & Bag, 2023).

One noteworthy constraint of this study pertains to the emergent stage of cybersecurity research within marketing tourism, as evidenced by the inclusion of merely eight articles in the sample. Consequently, several bibliometric analyses remain unexplored. Moreover, the adoption of specific selection criteria in both SLRs may have led to the exclusion of relevant articles. For instance, articles originating from disciplines beyond marketing, such as social sciences, which could offer valuable theoretical and methodological insights, might have been overlooked. Additionally, articles published in languages other than English were omitted from consideration. Furthermore, during the eligibility screening of the SLRs, articles lacking direct measurement of cybersecurity-related marketing topics were excluded to uphold a clear focus on the impact of cybersecurity.

Future research holds significant promise in analysing the impact of cybersecurity on both conscious and subconscious brain responses with the aim of enhancing customer satisfaction and loyalty. While existing studies have primarily focused on evaluating the explicit marketing implications of cybersecurity on behavioural responses, forthcoming research endeavours should examine deeper into the neurological dimensions of cybersecurity. By exploring the relationship between cybersecurity measures and neural processes, researchers can reveal novel insights into consumer behaviour and decision-making, eventually leading to more effective marketing strategies in the digital context.

Furthermore, scholars could pursue various research avenues, including investigating the implicit psychological impacts of cybersecurity on consumer perceptions and decision-making processes. For example, employing implicit measures such as implicit association tests (IATs) to assess subconscious attitudes toward brands and destinations regarding cybersecurity practices, building upon prior research findings (Frik & Gaudeul, 2020; Merritt et al., 2012). Additionally, exploring the Internet of Behaviour (IoB) for delivering personalized cybersecurity services could be beneficial, evaluating their impact on consumer attitudes (Javaid et al., 2021; 2022). These approaches hold the potential to deepen our comprehension of the connection between cybersecurity and consumer behaviour, furnishing insights for more targeted and effective marketing strategies.

In conclusion, cybersecurity is an emerging research area whose influence on consumer behaviours across the entirety of their customer journey, encompassing decision-making processes, purchase experiences, and post-purchase behaviours, has yet to be thoroughly examined. The challenge lies in cybersecurity's capacity to elicit effective responses from consumers, a metric that scholars can measure through research employing neuromarketing techniques (Tirandazi et al., 2022). As this field continues to evolve, understanding its dynamics becomes increasingly imperative for planning strategies that not only safeguard consumer interests but also optimize their overall experience in the digital marketplace.

References

- Albahari, A., Barge-Gil, A., Pérez-Canto, S., & Landoni, P. (2022). The effect of science and technology parks on tenant firms: A literature review. *The Journal of Technology Transfer*, 48(4), 1489–1531. <https://doi.org/10.1007/s10961-022-09949-7>
- Alhashmi, S. M., Hashem, I. A. T., & Al-Qudah, I. (2024). Artificial intelligence applications in healthcare: A bibliometric and topic model-based analysis. *Intelligent Systems with Applications*, 21, 200299. <https://doi.org/10.1016/j.iswa.2023.200299>
- Alqudhaibi, A., Krishna, A., Jagtap, S., Williams, N., Afy-Shararah, M., & Salonitis, K. (2024). Cybersecurity 4.0: Safeguarding trust and production in the digital food industry era. *Discover Food*, 4(1). <https://doi.org/10.1007/s44187-023-00071-7>
- Balasubramanian, S., Sethi, J. S., Ajayan, S., & Paris, C. M. (2022). An enabling framework for blockchain in tourism. *Information Technology & Tourism*, 24(2), 165–179. <https://doi.org/10.1007/s40558-022-00229-6>
- Beloskar, V. D., Halder, A., & Gupta, A. (2024). Gender equality and women's empowerment: A bibliometric review of the literature on SDG 5 through the

- management lens. *Journal of Business Research*, 172, 114442. <https://doi.org/10.1016/j.jbusres.2023.114442>
- Bengoa, A., Maseda, A., Iturralde, T., & Aparicio, G. (2020). A bibliometric review of the technology transfer literature. *The Journal of Technology Transfer*, 46(5), 1514–1550. <https://doi.org/10.1007/s10961-019-09774-5>
- Cano-Marin, E., Mora-Cantalops, M., & Sánchez-Alonso, S. (2023). Twitter as a predictive system: A systematic literature review. *Journal of Business Research*, 157, 113561. <https://doi.org/10.1016/j.jbusres.2022.113561>
- Chaudhuri, R., Apoorva, A., Vrontis, D., Siachou, E., & Trichina, E. (2023). How customer incivility affects service-sector employees: A systematic literature review and a bibliometric analysis. *Journal of Business Research*, 164, 114011. <https://doi.org/10.1016/j.jbusres.2023.114011>
- Deepa, R., Sekar, S., Malik, A., Kumar, J., & Attri, R. (2024). Impact of AI-focused technologies on social and technical competencies for HR managers: A systematic review and research agenda. *Technological Forecasting and Social Change*, 202, 123301. <https://doi.org/10.1016/j.techfore.2024.123301>
- Del Gesso, C., Lodhi, R. N., Asif, M., & Cobanoglu, C. (2024). A bibliometric analysis of intellectual capital research in the hospitality and tourism business setting. *International Journal of Hospitality Management*, 119, 103713. <https://doi.org/10.1016/j.ijhm.2024.103713>
- Douha, N. Y. R., Renaud, K., Taenaka, Y., & Kadobayashi, Y. (2023). Smart home cybersecurity awareness and behavioural incentives. *Information & Computer Security*, 31(5), 545–575. <https://doi.org/10.1108/ics-03-2023-0032>
- Frik, A., & Gaudeul, A. (2020). A measure of the implicit value of privacy under risk. *Journal of Consumer Marketing*, 37(4), 457–472. <https://doi.org/10.1108/jcm-06-2019-3286>
- Garg, P., Gupta, B., Chauhan, A. K., Sivarajah, U., Gupta, S., & Modgil, S. (2021). Measuring the perceived benefits of implementing blockchain technology in the banking sector. *Technological Forecasting and Social Change*, 163, 120407. <https://doi.org/10.1016/j.techfore.2020.120407>
- Gong, K. (2023). Twenty years of Chinese social sciences towards internationalization (1998–2017): A knowledge sources perspective. *Scientometrics*, 128(12), 6373–6402. <https://doi.org/10.1007/s11192-023-04859-3>
- Haba, H. F., Bredillet, C., & Dastane, O. (2023). Green consumer research: Trends and way forward based on bibliometric analysis. *Cleaner and Responsible Consumption*, 8, 100089. <https://doi.org/10.1016/j.clrc.2022.100089>
- Ioannou, A., Tussyadiah, I., & Miller, G. (2020). That's private! Understanding travelers' privacy concerns and online data disclosure. *Journal of Travel Research*, 60(7), 1510–1526. <https://doi.org/10.1177/0047287520951642>
- Javid, M., Haleem, A., Singh, R. P., Khan, S., & Suman, R. (2022). An extensive study on internet of behaviour (IoB)-enabled healthcare systems: Features, facilitators, and challenges. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, 2(4), 100085. <https://doi.org/10.1016/j.tbench.2023.100085>
- Javid, M., Haleem, A., Singh, R. P., Rab, S., & Suman, R. (2021). Internet of behaviours (IoB) and its role in customer services. *Sensors International*, 2, 100122. <https://doi.org/10.1016/j.sintl.2021.100122>

- Kaur, V. (2024). Neurostrategy: A scientometric analysis of marriage between neuroscience and strategic management. *Journal of Business Research*, 170, 114342. <https://doi.org/10.1016/j.jbusres.2023.114342>
- Khan, S. K., Shiwakoti, N., Stasinopoulos, P., & Warren, M. (2023). Modelling cybersecurity regulations for automated vehicles. *Accident Analysis & Prevention*, 186, 107054. <https://doi.org/10.1016/j.aap.2023.107054>
- Liu, Y., & Avello, M. (2021). Status of the research in fitness apps: A bibliometric analysis. *Telematics and Informatics*, 57, 101506. <https://doi.org/10.1016/j.tele.2020.101506>
- Makaya, C., Blanco, C., & Barrédy, C. (2023). Towards an ecological approach for interaction management in entrepreneurship courses. *Journal of Business Research*, 160, 113749. <https://doi.org/10.1016/j.jbusres.2023.113749>
- Merritt, S. M., Heimbaugh, H., LaChapell, J., & Lee, D. (2012). I trust it, but I don't know why. *Human Factors*, 55(3), 520–534. <https://doi.org/10.1177/0018720812465081>
- Moreno-Lobato, A., Di-Clemente, E., Hernández-Mogollón, J. M., & Campón-Cerro, A. M. (2023). How emotions sound: A literature review of music as an emotional tool in tourism marketing. *Tourism Management Perspectives*, 48, 101154. <https://doi.org/10.1016/j.tmp.2023.101154>
- Novitzky, P., Janssen, J., & Kokkeler, B. (2023). A systematic review of ethical challenges and opportunities of addressing domestic violence with AI technologies and online tools. *Heliyon*, 9(6), e17140. <https://doi.org/10.1016/j.heliyon.2023.e17140>
- Oludapo, S., Carroll, N., & Helfert, M. (2024). Why do so many digital transformations fail? A bibliometric analysis and future research agenda. *Journal of Business Research*, 174, 114528. <https://doi.org/10.1016/j.jbusres.2024.114528>
- Price, D. J. de Solla. (1963). *Little science, big science*. Columbia University Press.
- Price, D. J. de Solla. (1970). Citation measures of hard science, soft science, technology, and nonscience. In C. E. Nelson & D. K. Pollock (Eds.), *Communication among scientists and engineers* (pp. 3–22). Heath Lexington Books.
- Schlatt, V., Guggenberger, T., Schmid, J., & Urbach, N. (2023). Attacking the trust machine: Developing an information systems research agenda for blockchain cybersecurity. *International Journal of Information Management*, 68, 102470. <https://doi.org/10.1016/j.ijinfomgt.2022.102470>
- Srivastava, G., & Bag, S. (2023). Modern-day marketing concepts based on face recognition and neuromarketing: A review and future research directions. *Benchmarking: An International Journal*, 31(2), 410–438. <https://doi.org/10.1108/bij-09-2022-0588>
- Sule, M. J., Zennaro, M., & Thomas, G. (2021). Cybersecurity through the lens of digital identity and data protection: Issues and trends. *Technology in Society*, 67, 101734. <https://doi.org/10.1016/j.techsoc.2021.101734>
- Tirandazi, P., Bamakan, S. M. H., & Togholjerdi, A. (2022). A review of studies on internet of everything as an enabler of neuromarketing methods and techniques. *The Journal of Supercomputing*. <https://doi.org/10.1007/s11227-022-04988-1>