Binus Business Review, 14(2), July 2023, 193−208
DOI: 10.21512/bbr.v14i2.9108
P-ISSN: 2087-1228
E-ISSN: 2476-9053

Quality, Knowledge, and Innovation: A Systematic Literature Search and Bibliometric Analysis

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Received: 20th October 2022/ **Revised:** 17th April 2023/ **Accepted:** 17th April 2023

How to Cite: Ciptono, W. S., & Noviasari, T. P. (2023). Quality, Knowledge, and Innovation: A Systematic Literature Search and Bibliometric Analysis. *Binus Business Review, 14*(2), 193−208. https://doi.org/10.21512/bbr.v14i2.9108

ABSTRACT

Innovation is closely associated with quality and Knowledge Management (KM). However, there still needs to be more consensus on the nature of the relationship. Therefore, it is an opportunity to contribute further to the literature on innovation management studies. The research mapped research developments in quality subjects, knowledge, and innovation subjects from Scopus Database in an integrative and comprehensive manner using Microsoft Excel, Mendeley, and VOSviewer to conduct a bibliometric analysis. With PRISMA Flow Diagram in carrying out a systematic search, the research managed to capture 140 research articles on related topics published between 2002 and 2022. Through a systematic search and bibliometric analysis, the research identified, described, and characterized the origins, evolution, and intellectual structures of scientific knowledge associated with quality, knowledge, and innovation in management. For the results, the research underlines a lack of systematic efforts to develop a sound theoretical framework of the subject matters. The literature still lacks evidence concerning reference models and critical factors which can contribute to effective and efficient integration of quality, knowledge, and innovation, especially in the management field. At the end of the research, a framework is proposed to broaden the perspective of quality management practices that are not limited to Total Quality Management (TQM). The research result drives future studies to determine reciprocal relationships between TQM and KM and how this affinity can impact innovation.

Keywords: quality subjects, knowledge subjects, innovation subjects, systematic literature search, bibliometric analysis

INTRODUCTION

During the last couple of decades, the world has witnessed the evolution of quality, knowledge, and innovation as three factors sustaining an organization's competitive advantage. A recent survey from Boston Consulting Group (2021) uncovers that 75% of businesses now place innovation as their top three priorities. It is partly attributable to the innovation capacity to offer distinctive goods and procedures that boost consumer value and firm performance, denoted by growth, profitability, market value, cost reduction, risk reduction, and other financial gains (Kim et al., 2012; Wang et al., 2018; Dalgıç & Fazlıoğlu, 2021; Gupta, 2021; Hermundsdottir & Aspelund, 2022; Singh et al., 2022).

Innovation is a longstanding focus in management and is regarded as an essential stage in the process of competitiveness of organizations (Mendoza-Silva, 2021). Literature records a wide variety of ways of defining innovation. In 1934, Joseph A. Schumpeter, an economist, added a definition of "innovation" or "development" as "new combinations" of new or existing knowledge, resources, equipment, and other elements. Then, innovation was identified as the critical dimension of economic change (Carayannis, 2013). According to Granstrand and Holgersson (2020), innovation is an outcome of a process, resting on two defining characteristics: a degree of newness of a change and a degree of usefulness or success in the

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application of something new. The concept of 'new' can be explained as new to the world, a nation, a firm, and others.

Meanwhile, according to Ferasso and Grenier (2021), innovation is driven by Knowledge-Creation Process (KCP) and can take the form of marketable new products, critical tacit knowledge, prototypes, and patentable information. Thus, from a business perspective, innovation is definitely a thing that creates benefits or value-added to the organization. In summary, innovation is the process of acquiring, disseminating, and assimilating knowledge with the goal of producing new knowledge that takes the form of products and services. Innovation is a process that recombines existing knowledge in new ways (Du Plessis, 2007).

Innovation is also widely known as a process through which opportunities to create new value in a creative way are recognized, turned into ideas, and put into practice (Schilling & Shankar, 2019; Tidd & Bessant, 2020). Simply put, it is a process of transforming knowledge into output and outcome, which involves a new product, technology, market, material, and combination (Du Plessis, 2007). Therefore, the value of knowledge is prominent in innovation as Knowledge Management (KM) is the foundation of organizational learning.

KM is essential to accomplishing an organization's initiatives and strategies, such as acquiring valuable knowledge-based dynamic capabilities to respond to environmental changes and achieving desirable organizational performance (Tran et al., 2020). KM is summarized as a collective approach to creating, processing, disseminating, and using organizational knowledge in various forms (Yadav et al., 2020). KM creates a culture in which the value of knowledge and application thereof is identified and communicated. Then, it encourages knowledge-based processes and programs, such as innovation, which can be seen as the approach to value creation (Du Plessis, 2007; Yadav et al., 2020).

With the rise of the global knowledge economy, innovation has become a crucial component for organizations to get a competitive edge and demonstrate exceptional performance (Li et al., 2022), and the implementation and utilization of KM are too (Hassan & Raziq, 2019). Previous studies have identified a positive relationship between KM and innovation (Du Plessis, 2007; Gardeazabal et al., 2023; Honarpour et al., 2018; Mardani et al., 2018). According to Hassan and Raziq (2019), an organization's KM and growth are highly correlated, as the higher the KM is practiced, the higher its growth will be.

Moreover, KM processes, such as knowledge creation and application, significantly affect innovation quality (Duan et al., 2021). It means that KM practices not only boost an organization's innovation creation but also guard its quality. However, explosive knowledge can make innovation much more complicated (Du Plessis, 2007; Hassan & Raziq, 2019). Thus, ensuring appropriate management of knowledge should be done to ensure successful innovation (Du Plessis, 2007; Hassan & Raziq, 2019).

Not only KM but innovation is also frequently associated with quality management to gain competitive advantage or boost business performance (Antunes et al., 2017; García-Fernández et al., 2022; Thai Hoang et al., 2006). In the present challenging dynamic environment, innovation is seen as a capability that renews an organization's competitive edge and allows it to grow economically (Rasool et al., 2018). Innovations are generally associated with novel or sometimes disruptive approaches to the current practices and frameworks. Previous research has developed several innovation models (Rasool et al., 2018). Despite all the different takes, the common element in the definitions is a focus on newness, improvement, and the spread of ideas or technologies (Du Plessis, 2007). In another way, innovation is closely associated with change, which can be radical or incremental (Du Plessis, 2007).

Numerous previous studies have empirically shown a positive relationship between quality management practices and innovation (Antunes et al., 2017; Thai Hoang et al., 2006; Sciarelli et al., 2020; Vasic et al., 2022). Quality management practices promote innovation on a spectrum. According to Escrig-Tena et al. (2018), quality management practices are categorized as hard and soft practices. Hard practices directly influence product and process innovation, while soft practices are channeled via proactive behavior toward quality management. Other previous studies have even shown that quality management practices contribute to the practice of circular economy (Barros et al., 2021) and the achievement of sustainability (Li et al., 2018; Nguyen et al., 2018; Abbas & Kumari, 2023; Alsawafi et al., 2021; Psarommatis et al., 2022).

In a review conducted by García-Fernández et al. (2022), quality management practices, e.g., people management, employee training, and detailed-stable routines, are found to be the facilitator of innovation, especially in product and process innovation, both incremental and radical. Moreover, it is found that higher-quality management promotes more innovation by leading to a higher tolerance for failure, easing financial constraints, and hiring more high-quality inventors (Zhao et al., 2021). Despite conflicting results regarding the nature of innovation, i.e., incremental and radical, driven by quality management, its influence on innovation is crystal clear (García-Fernández et al., 2022).

Additionally, it is argued that innovation is essential for generating distinctive products and services, increasing value for businesses, and establishing entry barriers for new competitors (Antunes et al., 2017). The importance of quality management and innovation has motivated researchers to identify various driving forces of innovation and seek new ways of creating it through quality management practices (Schniederjans & Schniederjans, 2015), especially Total Quality Management (TQM) (Antunes

et al., 2017; Thai Hoang et al., 2006; Honarpour et al., 2017, 2018). It is also discovered that the practices of TQM support and enhance innovation (Thai Hoang et al., 2006; Antunes et al., 2017; Khalfallah et al., 2022). On the other hand, some studies find that TQM hinders innovation (Samaha, 1996; Thai Hoang et al., 2006; Leavengood & Anderson, 2011). It tends to encourage premature evaluation and early rejection of ideas (Samaha, 1996). However, there are still many debates as there are two opposing arguments regarding the relationship between TQM and innovation, i.e., whether TQM supports or impedes innovation (Thai Hoang et al., 2006). Despite all the contradictive results, the existing relationship between quality management and innovation is clear-cut.

Subsequently, KM and quality management are related in many ways. Quality management is a broadly defined topic as quality has diverse definitions depending on a particular context of an organization. Quality management is believed to play a fundamental role in an organization's activities, especially the production process (Carvalho et al., 2021). The majority of studies concur that the primary objective of quality management is to enhance and satisfy stakeholders' needs by eliminating flaws like error and rework (Schniederjans & Schniederjans, 2015), helping managers to pursue differentiation and superiority under the environment's constant changes, and improving organization's decision making (Carvalho et al., 2021). In addition, it can improve an organization's operational and financial performance, giving it a sustainable competitive advantage (Kim et al., 2012; Schniederjans & Schniederjans, 2015). Therefore, quality management practices are widely implemented. In summary, quality management is a holistic management philosophy that encourages all organizational functions through continuous improvement and organizational change (Kim et al., 2012).

Through TQM, KM can help businesses to develop their capacity for change and continuous improvement (Hung et al., 2010). Furthermore, it is found that the relationship between KM and TQM advocates a reciprocal mechanism (Honarpour et al., 2017). However, previous studies typically investigate KM and quality management individually or even view their interaction as unrelated fields (Hung et al., 2010; Honarpour et al., 2018). Even though studies that evaluate the relationship have started to appear, empirical studies are still lacking (Honarpour et al., 2017).

As previously stated, quality management and KM are frequently treated as unrelated components to innovation while they are not. However, knowledge is required to implement quality processes and is required to improve and update them (Kumar et al., 2014). Therefore, knowledge is a key source of sustainable competitive advantage among organizations, industries, and logistics service providers (Yadav et al., 2020). Knowledge can also be conceptualized in a variety of ways, as it is both complex and abstract. According to Gao et al. (2018), knowledge refers to a theoretical or practical understanding of a subject. Meanwhile, based on Yadav et al. (2020), knowledge is a key element of sustainable competitive advantage among organizations and industries. In addition, many organizations desire better use of knowledge for their business. Therefore, in response to the increasingly competitive environment, knowledge needs to be properly managed as it posits an important role, one of which is through KM.

A few researchers have recently shown interest in demonstrating the relationship between quality management and KM. However, those research findings have different perspectives regarding the nature of the relationships. KM processes, consisting of knowledge creation, knowledge acquisition, knowledge sharing, and knowledge application, are seen as mediators between quality management, especially TQM, and the organization's performance (Abbas & Kumari, 2023). The result is supported by Ong and Tan (2022) that TQM has no significant direct relationship with organizational performance but has a strong relationship when mediated by KM among electrical and electronics manufacturers in Malaysia. Furthermore, it is suggested that TQM positively relates to organizational sustainability, with KM playing a partial mediation role in this association (Zhang et al., 2021). On the other hand, TQM also facilitates the relationship between KM and innovation as a mediator (Hung et al., 2010).

These diverse results emphasize the importance of examining this relationship more closely. It is argued that there is reciprocal causation in the relationship between KM and quality management, especially TQM (Honarpour et al., 2017). However, empirical works confirming the relationship mechanism are still lacking. Therefore, future studies should concentrate on examining the interaction between them and possible variables that contribute to this relationship.

The previous description illustrates that a few pieces of existing literature evaluate the relationship between quality, knowledge, and innovation. The limitation to the subject is presumed to be caused by the lack of literature reviews to map and assess the existing intellectual territory related to the subject. Hence, the research tries to expand that limitation by executing a systematic search of the related literature and a bibliometrics analysis to map and assess the growth of the knowledge and its trends. The research answers three questions: 1) How is the records distribution of the literature regarding quality, knowledge, and innovation in the management field? 2) What is the character that represents the studies regarding quality, knowledge, and innovation in the management field? 3) What is the trend in the studies regarding quality, knowledge, and innovation in the management field? The expected benefit of the research gives the reference for future studies to develop the relationship of TQM and KM that can influence innovation in a positive way.

METHODS

One of the most significant jobs for furthering an area of study is synthesizing previous research findings through bibliometric analysis, which employs a systematic literature search. Traditionally, two methods are commonly used to do the job, i.e., the qualitative approach of a structured literature review and the quantitative approach of meta-analysis (Zupic & Čater, 2015). Then, a more modern method and workflow of science mapping based on the quantitative approach of the bibliometric research method using some tools and software to retrieve bibliometric data from some journal databases and visualize their network is introduced (Zupic & Čater, 2015). Bibliometrics is a cross-disciplinary field that uses mathematics and statistics to conduct quantitative analyses of all types of knowledge carriers (Ye, 2018).

Bibliometric analysis is a popular and rigorous method for exploring and analyzing large volumes of scientific data and enables its user to unpack the evolutionary nuances of a specific field (Donthu et al., 2021). Bibliometric data can be retrieved from journal databases like Web of Science (WOS), Scopus, and Google Scholar. Then, specific software is used for easier searching and calculating citation metrics from retrieved bibliometric data, e.g., using Publish or Perish. Next, some known bibliometric software to date is BibExcel, Sitkis, SciMAT, and Microsoft Excel. In contrast, some software known for network visualization is VOSviewer, UCINET, Sci2, Pajek, Netdraw, and CiteSpace. Basically, the objective of using bibliometric analysis is to analyze and visualize the knowledge base, research hotspot, and frontier in the field of research (Ye, 2018). Therefore, this method has gained immense popularity in mapping the structure and development of scientific fields and disciplines (Donthu et al., 2021; Zupic & Čater, 2015).

The researchers develop a search strategy for the systematic search to identify relevant literature. This search strategy is tailored to the Scopus database as it has a comprehensive pool of literature that expertly curates the bibliometric data of the desired literature worldwide. Moreover, employing the Scopus database helps the researchers to filter predatory publishing and uphold the integrity of the research. The search terms used are "Innovation," AND "Knowledge" AND "Quality" AND "Management". All searches span from database inception until August 2022 and include journal articles and conference papers in the final stage, published in English only. The search is intentionally quite loose so that all literature with related subjects is fully captured. At this stage, it extracts 377 research articles.

The selection criteria are based on the PRISMA statement (Moher et al., 2009). The search mainly focuses on mapping existing literature on quality, knowledge, and innovation in the field of business, management, and accounting. The search span is unlimited, resulting in the collected literature from 1981 to 2022. Once the initial search is done, the result is then filtered based on more specific keywords displayed on the search result's page. Specifically, the 377 extracted research articles are filtered by these keywords: innovation, innovation management, knowledge, knowledge management, knowledge

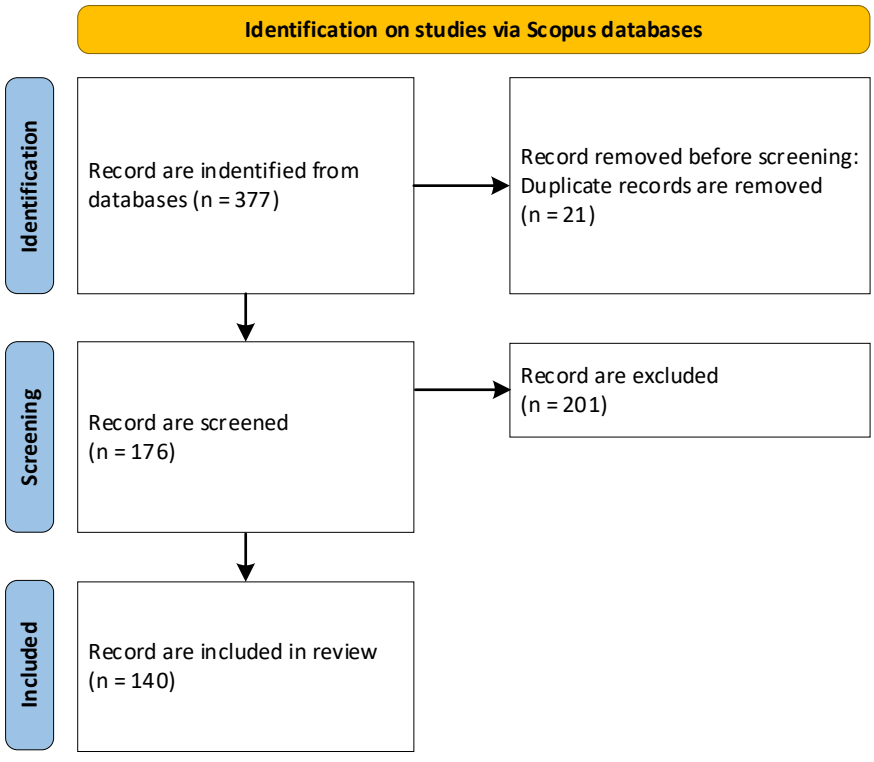

Figure 1 PRISMA Flow Diagram

transfer, knowledge sharing (knowledge-sharing), knowledge exchange, quality, quality management, quality control, and total quality management. Thus, a total of 201 research articles are excluded. A total of 176 research articles are extracted at this stage.

The research is based only on original research articles, meaning that only articles and conference papers are added to the inclusion. All duplications are checked thoroughly to maintain the quality of the review. The abstracts of the articles are checked deeply for the analysis and purification of the articles to ensure the quality and relevance of academic literature included in the review process. A careful evaluation of each research paper is carried out later. After filtration, 140 research articles from 2002 to 2022 are selected. It is after assessing each article on the aforementioned inclusion and exclusion criteria. Figure 1 shows the inclusion and exclusion process at every stage.

RESULTS AND DISCUSSIONS

According to the results of the systematic search, recorded literature on the subjects of quality, knowledge, and innovation associated with the management field for the last 20 years is constantly increasing, as shown in Figure 2. The number of publications has remained relatively constant throughout the first few years. However, the number of articles started to increase after 2014, and it was only recently that this number greatly increased. Although the record shows fluctuating bars, overall, a substantial increase has lasted until recent years.

Further analysis is then carried out to explore the obtained systematic search results. Table 1 (see Appendices) contains a list of articles on the subject which have been cited more than 100 times. The majority of published articles in Table 1 (see Appendices) discuss knowledge and innovation related to technology. As for the publication year, most of the listed publications have been published before 2010. The result may indicate that these studies are quite fundamental or a point of departure for many subsequent studies.

Meanwhile, Table 2 (see Appendices) contains a list of journals where all publications related to the subject are published. As shown in the table, there are 98 journal sources from which all published articles in the research originated. The majority of the journals are well-known and have good reputations in their specific fields. As can be seen from the list in Table 2 (see Appendices), apart from journals that specifically cover the themes of quality, knowledge, and innovation, there are journals with other relevant specific scopes to the topics examined in the research, such as technology, health management, business strategy, environment, small enterprises, and others.

Next, the analysis uses VosViewer to map the research development related to the subject. Table 3 (see Appendices) contains analysis results regarding country-wise distribution. In addition, it contains

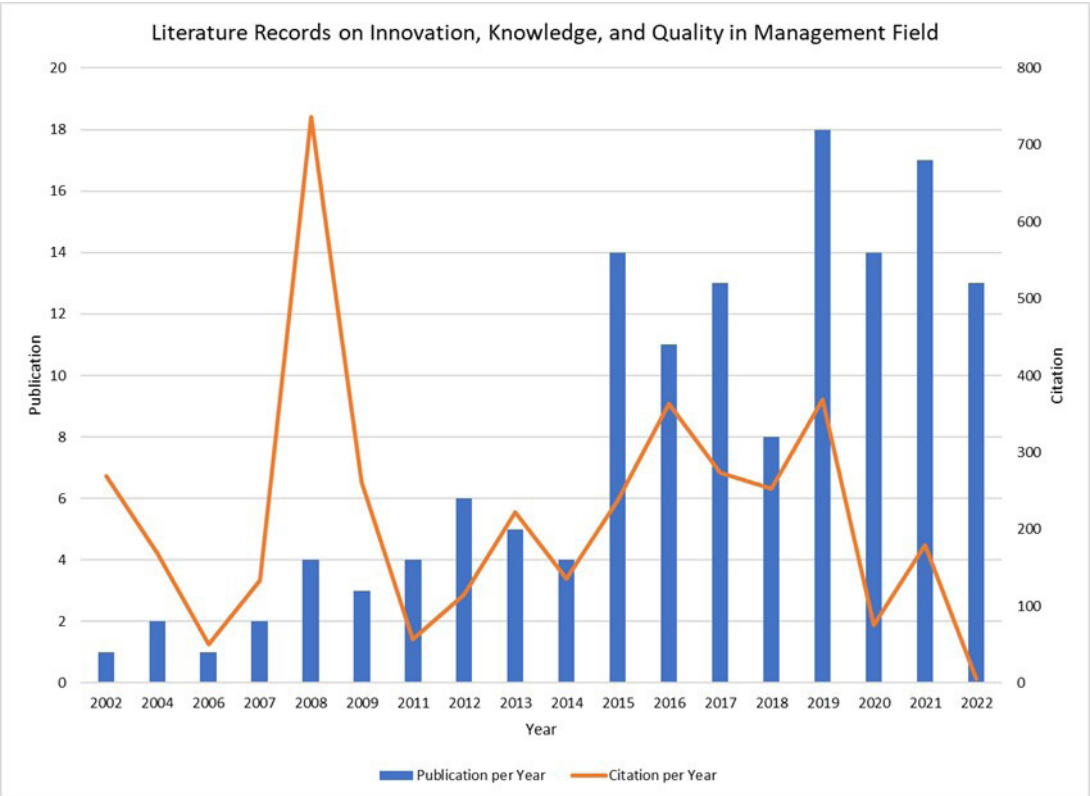

Figure 2 Systematic Search Literature Records

information regarding the number of publications and citations and the average number of citations and publications specific to the listed countries. As for the geographical dissemination of publications, the United Kingdom is overwhelmingly the most common. It is followed by the United States, Italy, Australia, the Netherlands, Spain, Brazil, France, Finland, Sweden, China, and many others, with contributions below six publications. Meanwhile, unlike the geographical layout of publications, the average citation per year shows Belgium emerging as the country with the highest publication citation records. It is followed by Switzerland, Hong Kong, and Japan.

According to the analysis results of VOSviewer, there are 1021 keywords in the literature of quality, knowledge, and innovation in management. About 867 keywords appear only once, accounting for 84,92%. The number of keywords that appear twice and three times is 154 and 68, respectively. Bibliometric analysis is then carried out by setting the minimum number of occurrences of a keyword 4 times and mapping 38 keywords. The network and density visualization of quality, knowledge, and innovation in management literature from 2002 to 2022 are shown in Figures 3 and 4, respectively.

Keywords with their frequencies are shown in Table 4 (see Appendices). The studies of quality, knowledge, and innovation in management present several characteristics. First, the research topic coverage shows an unbalanced range. The topic

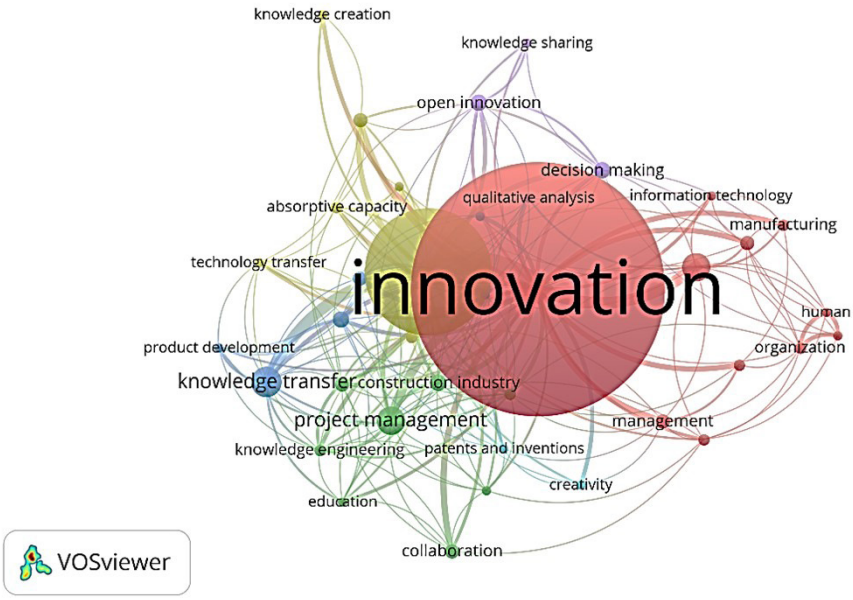

Figure 3 Network Visualization of the Analyzed Literature

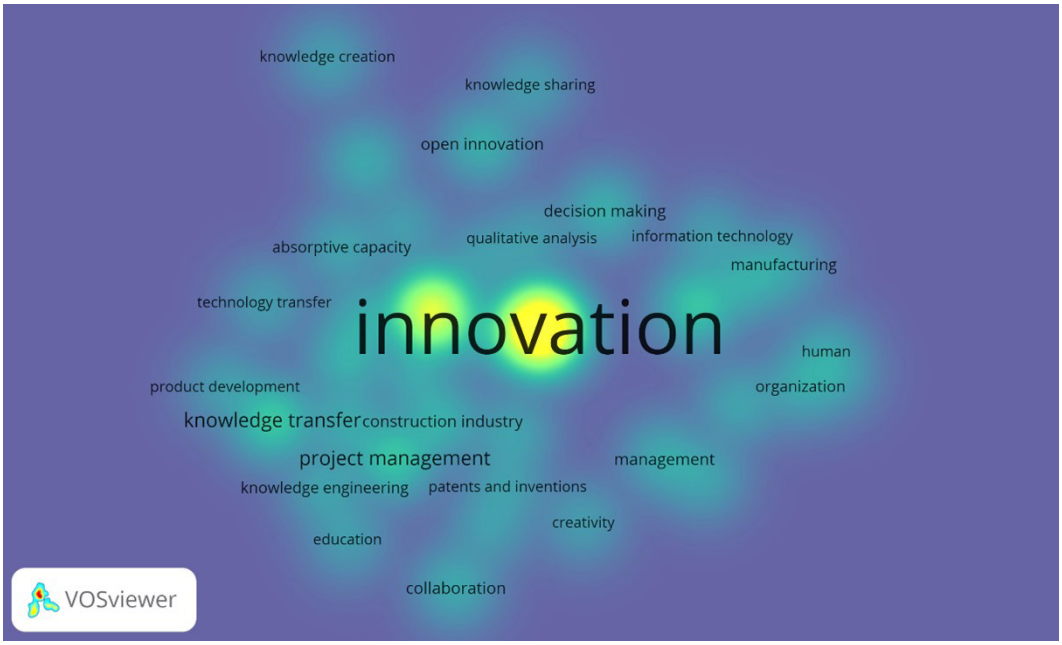

Figure 4 Density Visualization of the Analyzed Literature

of innovation and knowledge management with respective derivative keywords are associated as equivalent elements. There are just a few associated innovation and/or knowledge management and/or respective derivative keywords with quality management and its derivative keywords. Second, the topic of quality control found has more connection with innovation and knowledge management research through keywords, such as innovation, knowledge transfer, project management, knowledge engineering, collaboration, absorptive capacity, organizational learning, human resource management, knowledge exchange, technology transfer, and others. The details can be seen in Figure 5. Third, the topic of quality management only has an association with a few other topics, such as innovation, competitive advantage, competition, qualitative analysis, knowledge, and marketing, as seen in Figure 6. Fourth, the perspective of industry, construction, and manufacturing industries is the most subjected in the subjects' studies. It means that the industry coverage is not widely distributed yet as the keyword represents other areas, e.g., the service industry or Small and Medium Enterprises (SMEs).

Figure 7 displays the trends of the analyzed studies. As displayed, recent studies regarding quality, knowledge, and innovation in the management field are mostly directed or still limited to the areas of human factors in the management or organization to gain or support sustainable development. Therefore, the call to further revelation of the mechanism of the analyzed subject is loud, as stated earlier. It still needs to be well-researched.

Next, the research adopts the research model of Honarpour et al. (2018) to understand the mechanism further. It studies the analyzed subject in a more general approach, as seen in Figure 8. It indicates that TQM and KM formulate reciprocal causation, but contextual factors may affect the relationship (Honarpour et al.,

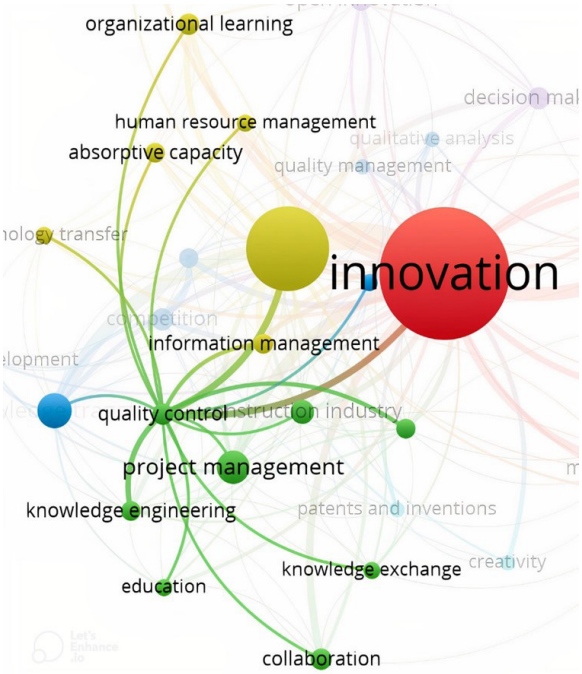

Figure 5 Network Visualization of Sub-Quality Control

Figure 6 Network Visualization of Sub-Quality Management

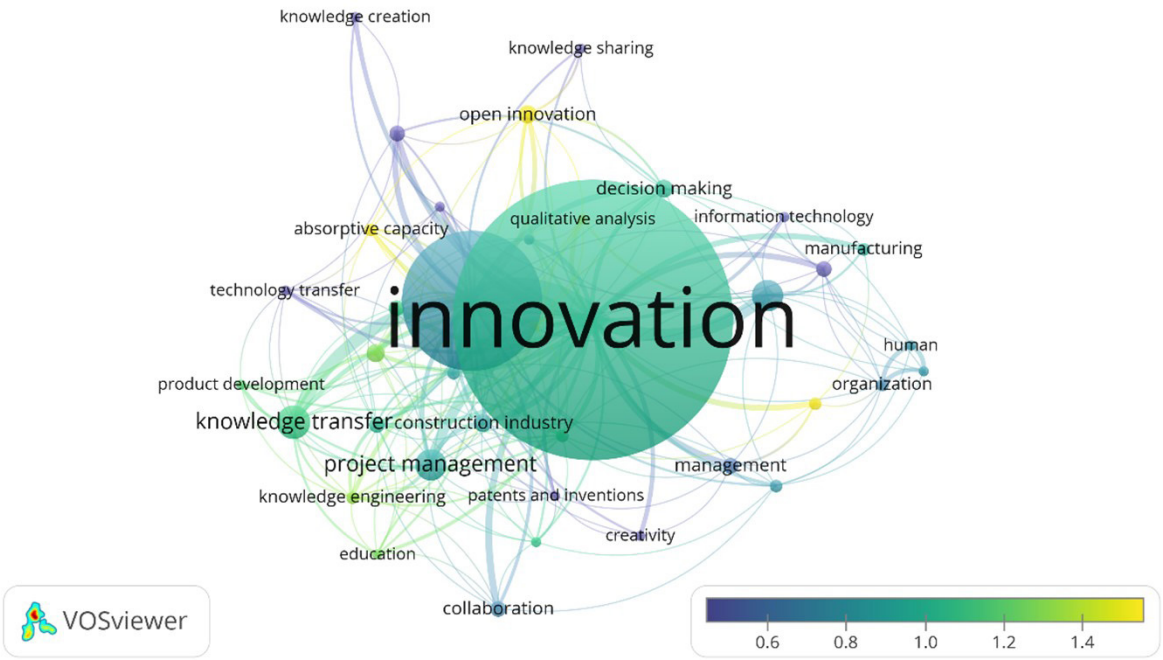

Figure 7 Overlay Visualization of the Analyzed Literature

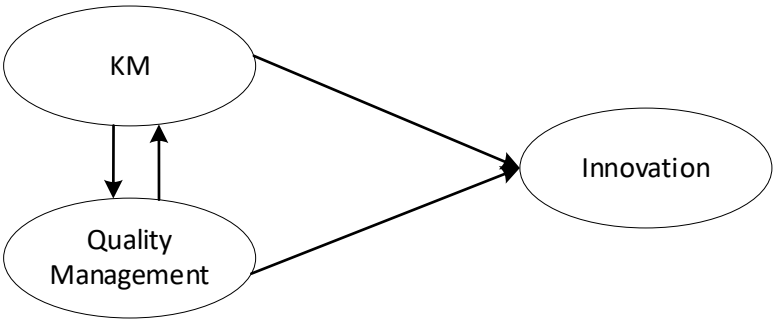

Figure 8 Proposed Framework of the Analyzed Subject's Mechanism

2018). So, future studies to investigate the issue are needed. Furthermore, as found earlier, the linkages of quality management to innovation and KM studies are unbalanced. Therefore, more exploration should be taken to address the issue. Therefore, the research proposes a framework that suggests future studies to broaden the perspective of quality management practices that are not limited to TQM.

CONCLUSIONS

The research results present an attempt to answer research questions about the distribution of the record, representing characteristics, and trends in studies of quality, knowledge, and innovation in management literature. In short, the research topics coverage shows an unbalanced range. It can be seen that pretty much the topic of innovation and KM are associated as equivalent elements. Meanwhile, there are just a few associated innovations and KM with quality management. Then, quality management is only associated with other topics, such as innovation, competitive advantage, competition, qualitative analysis, knowledge, and marketing. However, quality control is found to have more connection with innovation and KM research. Furthermore, recent studies regarding quality, knowledge, and innovation in management are mostly directed or still limited to the areas of human(s) factor in the management or organization to gain or support sustainable development.

In conclusion, three issues are found. First, there are inconsistent research results that have investigated the relationship between quality management and KM. Second, contradictory results are found in the relationship between KM and innovation. Third, it is a shortage of empirical studies which examine the relationship between quality, knowledge, and innovation in the management field at once. Moreover, previous studies have tried to address these inconsistent

and contradictory results. However, empirical studies with consistent results or further identification of underlying factors regarding the subject are still lacking.

There has been a limited amount of empirical discussion in the research since it focuses on building theories. More detailed research needs to be done on the practical applications of the theory to gain a deeper understanding of the implications of the research. Future research can also provide insight into the manifestation of the proposed framework in an empirical setting.

ACKNOWLEDGEMENT

The research is supported by a research grant from the Faculty of Economics and Business, Universitas Gadjah Mada (FEB UGM), in 2023. The first author is indebted to the FEB UGM, which provided a grant to assist with the research reported.

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APPENDICES

Table 1 Top 10 Most Cited Literatures on Quality, Knowledge, and Innovation

No.	Author(s)	Title	Year	Cited by
1	Singh, J.	Distributed R&D, cross-regional knowledge integration and quality of innovative output	2008	298
2	Takeishi, A.	Knowledge partitioning in the interfirm division of labor: The case of automotive product development	2002	269
3	Magnusson, P. R.	Exploring the contributions of involving ordinary users in ideation of technology-based services	2009	225
4	Haefliger, S., Von Krogh, G., & Spaeth, S.	Code reuse in open source software	2008	198
5	Blazevic, V. & Lievens, A.	Managing innovation through customer coproduced knowledge in electronic services: An exploratory study	2008	193
6	Chua, A. Y. K. & Banerjee, S.	Customer knowledge management via social media: The case of Starbucks	2013	184
7	Scuotto, V., Del Giudice, M., & Carayannis, E. G.	The effect of social networking sites and absorptive capacity on SMES' innovation performance	2017	151
8	Bossink, B. A. G.	Managing drivers of innovation in construction networks	2004	129
9	Zhang, Y., Zhang, G., Chen, H., Porter, A. L., Zhu, D., & Lu, J.	Topic analysis and forecasting for science, technology and innovation: Methodology with a case study focusing on big data research	2016	115
10	Gunasekaran, A. & Ngai, E. W. T.	Knowledge management in 21st century manufacturing	2007	100

Table 2 Journal Sources from Systematic Search on Quality, Knowledge, and Innovation

No.	Journal Source	Count	No.	Journal Source	Count
1	Journal of Knowledge Management	6	50	Foresight and STI Governance	1
2	Journal of Technology Transfer	5	51	International Journal of Information Management	1
3	Technological Forecasting and Social Change	5	52	International Journal of Innovation Management	1
4	Research Policy	5	53	Polish Journal of Management Studies	1
5	Journal of Cleaner Production	4	54	Journal of Business Ethics	1
6	International Journal of Knowledge Management	3	55	Corporate Social Responsibility and Environmental Management	1
7	Business Strategy and the Environment	3	56	Journal of Management in Engineering	1
8	Journal of Health Organization and Management	3	57	Business Process Management Journal	1
9	Journal of Technology Management and Innovation	3	58	Asia Pacific Journal of Management	1
10	International Journal of Project Management	2	59	Gadjah Mada International Journal of Business	1
11	International Journal of Logistics Management	2	60	Gestao e Producao	1
12	Employee Relations	2	61	Data Base for Advances in Information Systems	1
13	Strategic Management Journal	2	62	PICMET 2016 - Portland International Conference on Management of Engineering and Technology: Technology Management for Social Innovation, Proceedings	1
14	International Journal of Health Care Quality Assurance	2	63	Small Enterprise Research	1
15	Journal of Innovation and Entrepreneurship	2	64	Entrepreneurial Business and Economics Review	1
16	Innovation and Management Review	2	65	Intangible Capital	1
17	International Journal of Recent Technology and Engineering	2	66	2016 IEEE International Conference on Management of Innovation and Technology, ICMIT 2016	1
18	Journal of Business Research	2	67	Information and Management	1
19	International Journal of Production Economics	2	68	International Journal of Knowledge-Based Development	1
20	Engineering, Construction and Architectural Management	2	69	Information Systems Research	1
21	International Conference on Information and Knowledge Management, Proceedings	2	70	Learning Organization	1
22	Journal of Product Innovation Management	2	71	Problems and Perspectives in Management	1
23	Journal of Innovation Management	2	72	Journal of Intellectual Capital	1
24	Revista Brasileira de Gestao de Negocios	2	73	Knowledge Management Research and Practice	1
25	Academia Revista Latinoamericana de Administracion	1	74	Innovar	1
26	Supply Chain Management	1	75	International Journal of Innovation and Learning	1
27	Retos (Ecuador)	1	76	Production Planning and Control	1
28	Knowledge Management and E-Learning	1	77	Journal of Engineering and Technology Management - JET-M	1
29	Technology in Society	1	78	Nordic Journal of Working Life Studies	1

Table 2 Journal Sources from Systematic Search on Quality, Knowledge, and Innovation (Continued)

No.	Journal Source	Count	No.	Journal Source	Count
30	Journal of Engineering, Project, and Production Management	1	79	International Journal of Technology Management	1
31	Revista de Administracao Mackenzie	1	80	Journal of Industrial Engineering and Management	1
32	Journal of Manufacturing Technology Management	1	81	International Journal of Managing Projects in Business	1
33	Journal of Civil Engineering and Management	1	82	Business: Theory and Practice	1
34	Tertiary Education and Management	1	83	Journal of Small Business and Enterprise Development	1
35	IEEE Transactions on Engineering Management	1	84	Construction Management and Economics	1
36	Competitiveness Review	1	85	Asian Journal of Technology Innovation	1
37	Acta Commercii	1	86	Journal of Applied Business Research	1
38	International Journal of Information Systems and Project Management	1	87	European Business Review	1
39	Uncertain Supply Chain Management	1	88	Industry and Innovation	1
40	Current Issues in Tourism	1	89	Marketing Intelligence and Planning	1
41	European Journal of Information Systems	1	90	Tourism Economics	1
42	Total Quality Management and Business Excellence	1	91	Journal of the Academy of Marketing Science	1
43	2020 IEEE International Conference on Technology Management, Operations and Decisions, ICTMOD 2020	1	92	Management Science	1
44	Journal of Work-Applied Management	1	93	European Journal of Innovation Management	1
45	Futures	1	94	International Journal of Production Research	1
46	International Journal of Quality and Reliability Management	1	95	Journal of Construction Engineering and Management	1
47	International Journal of Asian Business and Information Management	1	96	Economics of Innovation and New Technology	1
48	Journal of Workplace Learning	1	97	Organization Science	1
49	Cogent Business and Management	1	98	MIS Quarterly: Management Information Systems	1

Table 3 Country-Wise Distribution Analysis

No.	Country	Published Articles	Citation Count	Average Citation per Year	Average Publication per Year
1	United Kingdom	29	715	24,66	2017,8276
2	United States	15	525	35	2016,6
3	Italy	14	385	27,5	2018,7143
4	Australia	10	351	35,1	2014,2
5	Netherlands	10	484	48,4	2016,6
6	Spain	10	118	11,8	2018
7	Germany	9	156	17,33	2019
8	Brazil	8	77	9,63	2017
9	France	8	146	18,25	2014,625
10	Finland	7	61	8,71	2018,7143
11	Sweden	7	316	45,14	2016
12	China	6	252	42	2016,8333
13	Canada	5	95	19	2016,2
14	Indonesia	5	34	6,8	2018,4
15	Malaysia	5	197	39,4	2018,6
16	Japan	4	310	77,5	2011,25
17	Austria	2	52	26	2016,5
18	New Zealand	2	37	18,5	2018
19	Pakistan	2	61	30,5	2018,5
20	Portugal	2	20	10	2020,5
21	Switzerland	2	227	113,5	2013,5
22	Thailand	2	57	28,5	2013
23	United Arab Emirates	2	134	67	2019
24	Belgium	1	193	193	2008
25	Bolivia	1	32	32	2015
26	Egypt	1	50	50	2021
27	Engineering	1	49	49	2018
28	Hong Kong	1	100	100	2007
29	Israel	1	50	50	2006
30	Palestine	1	50	50	2021
31	Poland	1	0	0	2022
32	Russian Federation	1	14	14	2018
33	Saudi Arabia	1	42	42	2018
34	South Korea	1	0	0	2017

Table 4 Most Frequently Occurring Keywords Found

No.	Keyword	Occurrences	Average Pub. per Year	Average Citations
1	Innovation	106	2015,9434	31,5283
2	Knowledge Management	53	2016,8302	20,9811
3	Knowledge Transfer	13	2018,0769	23,3077
4	Knowledge	12	2015,6667	31,6667
5	Project Management	12	2014,5833	57,5
6	Competition	7	2016,4286	33,1429
7	Construction Industry	7	2014,7143	40,7143
8	Decision Making	7	2017,4286	18,2857
9	Open Innovation	7	2017,2857	21,4286
10	Collaboration	6	2017,6667	63,3333
11	Competitive Advantage	6	2014,3333	33
12	Learning	6	2017,3333	6,5
13	Management	6	2018	13
14	Organizational Learning	6	2016,5	7,5
15	Quality Control	6	2012,5	86
16	Absorptive Capacity	5	2016,2	43,8
17	Information Management	5	2016,6	28
18	Knowledge Engineering	5	2010,8	139,8
19	Manufacturing	5	2020,2	10
20	Organization	5	2019,2	5,4
21	Qualitative Research	5	2019,4	10,8
22	Societies and Institutions	5	2014,4	51
23	Sustainable Development	5	2019,6	18,6
24	Creativity	4	2016,75	10,25
25	Education	4	2016,75	40,25
26	Human	4	2019,25	5
27	Human Resource Management	4	2017,75	8,5
28	Humans	4	2019,25	5
29	Information Technology	4	2014,25	28,75
30	Knowledge Creation	4	2011,25	59,5
31	Knowledge Exchange	4	2015	46
32	Knowledge Sharing	4	2019,25	2,75
33	Marketing	4	2010,75	103
34	Patents and Inventions	4	2015,25	23,5
35	Product Development	4	2015,75	67,75
36	Qualitative Analysis	4	2018	20
37	Quality Management	4	2017,5	12
38	Technology Transfer	4	2016,25	4,5