

REVIEW

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# Innovation strategy and firm competitiveness: a systematic literature review

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## Abstract

This systematic review aims to review the effect of innovation strategy on firm competitiveness and to establish a theoretical background for future studies in the innovation and firm competitiveness literature. A total of 40 studies covering the innovation strategy and firm competitiveness were from 2015 to 2023 and analysed via a PRISMA method using the descriptive content analysis. These studies were found in the Scopus, Web of Science, PubMed, and Faylor and Francis databases. The findings from this review show that a large majority of the reviewed studies has concluded that innovation strategy have a positive relationship and effect between firm competitiveness. This study offers the chance to empirically examine innovation strategy and firm competitiveness from various angles. Despite a rapid recent increase in publications and special issue calls, many opportune research avenues within the innovation strategy and firm competitiveness field require further investigation.

**Keywords:** Innovation, Strategy, Firm, Competitiveness, Systematic review

## Introduction

Globally, strategic innovation is an important factor for organization, sustainable competitive advantage and financial performance (Nybakk & Jenssen, 2012). A good strategy is one that actually generates a competitive advantage that differentiates an organization with its competitors by giving it sustainable edge that is valuable, rare and not easy to imitate (Nybakk & Jenssen, 2012). The innovation strategy explains financial performance more than other dimensions of firm performance (Tugba, 2015). Competitiveness can be conceptualized under different perspectives or dimensions. Competitiveness can be measured according to their level of analysis: country, sector, company (Wysoki, 2003). Marketing strategies in the MSMEs sector by integrating market orientation and entrepreneurial orientation to improve business performance (Yaskun et al., 2023).

The emergence of innovations in time and its expansion in the process reveal the necessity of both innovation and expansion processes (Fongsuwan et al., 2017). According to Ungerman et al., (2018) Marketing innovation is identified as a search for creative and new solutions to problems and needs. For businesses to become more competitive and improving their performance, they must constantly develop new products as well as strategies. Globalization and increasing market competitiveness

have driven financial institutions toward innovativeness in their operation to gain sustainable competitive advantage and improve their financial performance (Muigai, 2018).

To gain a competitive edge and improve performance, they need to be innovative in their modes of operations (Mohapatra & Patra, 2017). The relationship between sustainability innovations and competitiveness and to identify the contextual factors that mediate and moderate this relationship (Hermundsdottir & Aspelund, 2021). According to Srivastava et al., (2017) study reveals a positive relationship between competitiveness of the firms and innovation competence of the firm. The innovative capability of manufacturing MSMEs has a significant positive relationship with the firm's performance (Vijayakumar & Chandrasekar, 2022).

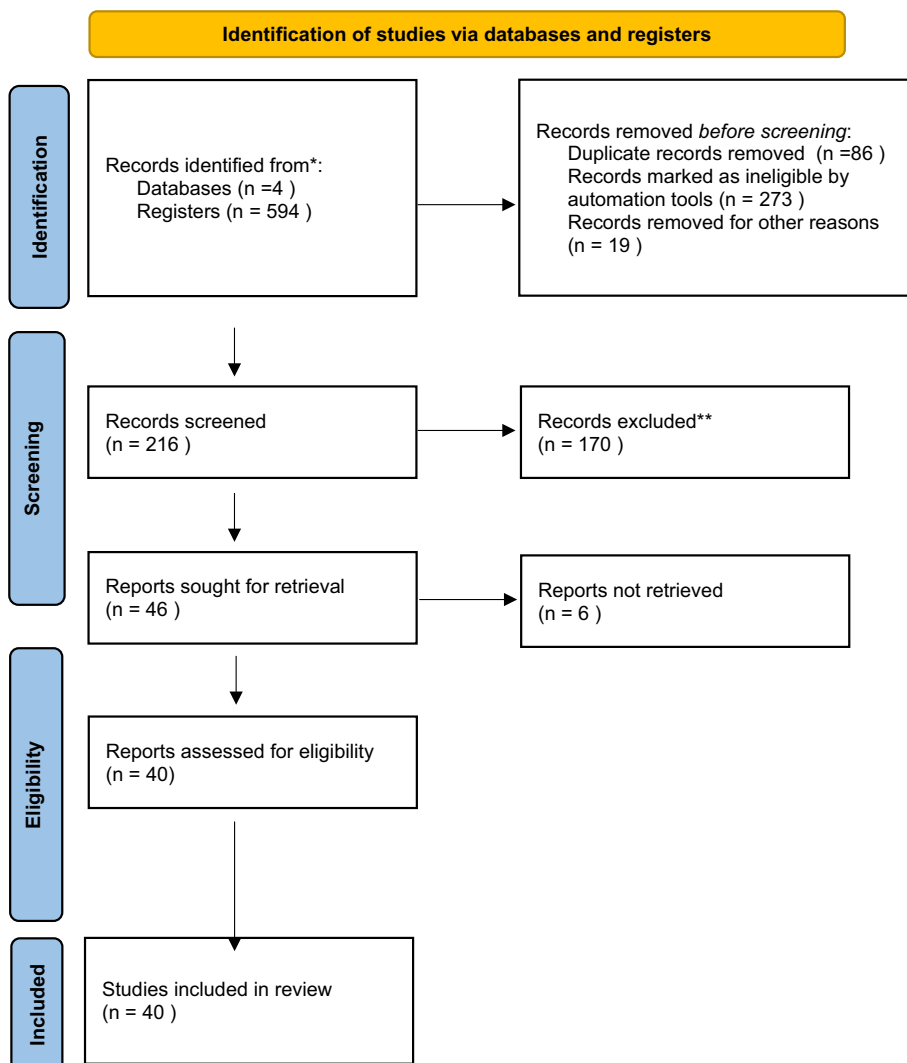
### Research gap

According to Hermundsdottir and Aspelund (2021); Sangari et al. (2023) review makes important contributions to the literature concerning the effect of innovation strategy on firm competitiveness, it has a number of limitations. Firstly, the choice of databases could have affected the number of relevant articles. Secondly, relevant studies using terms other than the keywords used were not found in the literature search. Thirdly, the inclusion criteria of keywords in abstracts could also have excluded relevant papers. Fourthly, the discovered publication year were not recent. This may be another limitation of conducting this type of study (Herrmann & Kara, 2017). Finally, the literature review approach, despite the use of inclusion and exclusion criteria, still entails making individual decisions on what is relevant versus irrelevant literature. Therefore, the main objective of this study was to determine the relationship innovation strategy on firm competitiveness and to establish a theoretical background for future studies. Thus, study proposed to answer the following questions:

1. How are the relationship between innovation strategy and firm competitiveness?
2. What are the effects of innovation strategy on firm competitiveness?
3. What types of research approaches have been used in those articles?
4. Which databases were journal articles of scholars published?

### Research methods

Snyder (2019) explained that there are several approaches in the literature review methodology, which commonly used in social sciences such as *systematic literature review*, *semi-systematic literature review*, and *integrative literature review*. This study is applying systematic literature review, which are characterized by a methodical, transparent, replicable methodology and presentation. They involve a comprehensive and systematic search to locate all relevant published work that addresses one or more research questions, and a systematic presentation and integration of the characteristics and findings of the results of that search.



**Fig. 1** Displays the PRISMA that were obtained. Source: by authors (2023)

**Data collection**

This study was started by setting review procedure, adopted Rethlefsen et al. (2021) from Fig. 1 that displays the PRISMA obtained based on the research objective. PRISMA involves a four-phase process of minimum “evidence-based” analysis and reporting existing literature through “systematic reviews and meta-analysis” (David et al. 2019). As displayed below, only 40 of the original 594 articles were ultimately included in the investigation, which enables to precisely outline and plan to be followed in the process of review. The review procedure enables this study to create a systematic, replicable, and transparent analysis and the paper followed a systematic article selection process as summarized.

**Selection of databases**

All studies in databases that have been included in the scope of the research to provide a high-quality peer-reviewed journal range. Studies on innovation strategy and

firm competitiveness in the databases were scanned together with the key in the systematic review, databases were systematically searched for eligible studies and the data were derived from the databases Scopus, Taylor & Francis, Web of Science and PubMed. Based on this review, the researcher selected 40 articles from amongst 594 papers that were uncovered in the databases.

### **Inclusion and exclusion**

The current study used some inclusion and exclusion criteria. Three inclusion criteria were employed such as search boundary, time of publication, language and keywords. As per the recommendation of Tasdemir and Gazo (2018), to ensure search completeness some additional journals were added to the list but were published in international peer-reviewed journals which are considered to be the most reliable sources. The results of the search were obtained from English-language journal articles published from 2015 to 2023 in peer-reviewed journals. For the initial search, the search keyword terms of Boolean technique were as follows:

TITLE-ABS-KEY (innovation) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (PUBYEAR, 2023) OR LIMIT-TO (PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017) OR LIMIT-TO (PUBYEAR, 2016) OR LIMIT-TO (PUBYEAR, 2015)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "SOC") OR LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (EXACTKEYWORD, "Innovation")) OR LIMIT-TO (EXACTKEYWORD, "Competitiveness")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j"))).

Besides, the study used a series of inclusion criteria to screen papers for the review. These factors included: English language, years of papers publication  $\geq 2015$ , papers that had been published in peer-reviewed journals and dealt with innovation strategy and firm competitiveness as the main aim of the study. The earliest date of interest was based on 2015 since, in that year, several publications made an effort to stress concerns of innovation strategy and company competitiveness.

The exclusion criteria include relevance, quality and duplication. It was done via reading of abstract and conclusion of downloaded articles from different databases. The relevance was determined by deciding whether articles fit to keywords used as search string and to ensure the quality, the study excluded unpublished articles, books, reports, thesis, dissertation, different reviews, working papers and conference papers to enhance the findings from this review. Duplicated articles were excluded by assigning ID code for each article and manual detection.

### **Data analysis**

To this study, PRISMA is a process of evaluating literature studies that focus on this study and descriptive content analysis, as well as review questions that were established at the start of the review process. The descriptive content analysis was carried out using the data extraction form's categories (Snilstveit et al., 2012). It was accomplished by tabulation, specifically for the discussion of research characteristics results using SPSS Version 25.

### Study characteristics

Aiming to provide readers with a brief introduction regarding the reviewed articles in Table 1, the study used points such as databases characteristics as follows.

The below Fig. 2, pie chart shows that 40 of articles used for review, in this study, were accessed from Scopus 72% followed by Web of Science 15%, Taylor and Francis were 8% and PubMed were 5%. This shows database of Scopus indexed journals were used more published article on innovation strategy and firm competitiveness related issues that was indicates strong peer-reviewed and reputable articles selected for review.

As presented in Fig. 3, in year of 2023 were more articles selected for review, which is 25% and followed by year 2021 were 15% and small number of selected articles were published in 2018% are systematically reviewed articles.

As shown in Fig. 4, majority (64.9%) were quantitative research article followed by (21.6%) were mixed research articles with next follow (10.8%) were mathematical approach and small number methods were (2.7%) were bibliometric.

As shown in Fig. 5, pie chart above, majority coverage of the selected article case area was (57%) in Asia, followed by (24%) were Europe and Africa areas were 19% covers in each of the selected article for review.

The results of this descriptive study found 40 relevant articles that demonstrate databases for article search, year of publication, type of article and geographical regions of the article covers.

### Conclusion

In this systematic review, 40 articles were reviewed with the goal of mapping the current state of the research on the relationship between innovation strategy and competitiveness and identifying the factors that influence this relationship. By reviewing systematically, several contributions are made. First, the findings from this review show that a large majority of the reviewed studies has concluded that innovation strategy have a positive effect on firm competitiveness. This review has proposed several recommendations for future studies, such as increasing the study of innovation and firm competitiveness. Another recommendation proposed by this review was to have more studies on SLRs and the applications of PRISMA methods were deployed. This study is the only one currently applied SLR and PRISMA based on four central databases (Scopus, Taylor Francis, Web of Science and Pubmed) to review. The third recommendation suggested by this study was to explore in the context of innovation strategy and competitiveness, which researchers currently prefer.

### Managerial implications

The study has implications for the managers to identify the relationship of innovation strategy and firm competitiveness that were devoted to the future thinking needed in solution firms and explore different models. This review would be relevant from a particular manager's viewpoint but does not seem to exist. Additionally, there do not seem to be any existing studies focusing specifically on the innovation strategy and firm competitiveness. Implications should be targeted more specifically, not only "for the firm" or "to managers" but to a particular manager, to explore models on

**Table 1** Summarized review on innovation strategy and firm competitiveness

Year	Authors name	Title	Study objective	Type of research approach	Findings
2015	Tugba (2015)	Effects of Innovation Strategy on Firm Performance: A Study Conducted on Manufacturing Firms in Turkey	To explore the effects of innovation strategy on the firm performance	Quantitative	Findings demonstrate the innovation strategy leads these firms to improve their customer performance, internal business processes performance and learning and growth performance
2019	Celtekligil, and Adiguzel (2019)	Analysis of The Effect of Innovation Strategy and Technological Turbulence on Competitive Capabilities and Organizational Innovativeness in Technology Firms	To investigate and analyse how they are successful in industry firms of manufacturing sector in Turkey that is in the order of emerging countries, against rivalry in terms of both technological and innovation strategy	Quantitative	Findings show that firms have innovative strategies and have a positive effect on the development of competitiveness and development of organizational innovation
2019	Muigai and Gitau al. (2018)	Effect Of Innovation Strategies On Financial Performance of The Banking Industry In Kenya	Sought to establish effect of innovation strategies on financial performance of firms in the banking industry in Kenya	Quantitative	Findings show that product innovation strategies such as the introduction of new products and services, improvement of existing products and services and offering of a wide range of products than competitors positively affect financial performance of firms in the banking industry in Kenya
2021	Koyluoglu and Dogan (2021)	The Impact Of Innovation Strategies On Business Performance: Practices In High Technology Companies In Turkey	To examine the effect of innovation strategies on business performance in enterprises using high technology	Mixed	Findings show that Analytical, defensive, future-oriented, and proactive strategies are effective on product performance, customer-based performance, and financial performance of businesses. As a result, it was determined that innovation strategies affect customer-based performance ( $R^2 = 0.687$ ) and financial performance ( $R^2 = 0.701$ ) of companies more
2019	Kiptoo and Koech (2019)	Effect Of Strategic Innovations On Organizational Performance	To examine the effect of strategic innovations on organizational performance of manufacturing firms in Kwale County	Quantitative	The study concluded that the manufacturing firms carry out benchmark activities with the best technology in the industry
2016	Riyadi and Sumardi (2017)	The Impact of Innovation Strategy Toward Business Competitiveness of Manufacturing Industry in Surabaya, Indonesia	To examine and analyse the effect of administrative innovation on business competitiveness, technical innovations on business competitiveness, process innovation on business competitiveness, and product innovation on business competitiveness	Quantitative	The results show that innovation strategy that consists of administrative innovation, technical innovation, process innovation, and product innovation can enhance organizational competitiveness in the manufacturing industry context

**Table 1** (continued)

Year	Authors name	Title	Study objective	Type of research approach	Findings
2016	Zainurossalamia et al. (2016)	The Effect of Innovation on Firm Performance and Competitive Advantage	To analyze the effect of innovation on Firm Performance mediated by competitive advantage	Mixed	The study proves that innovation strategy of SMEs in Indonesia are in the ability to make better products, in the production process by using advances in technology, as well as in the technology development and maintenance
2019	Cappielloa et al. (2020)	Social capital and its effect on networked firm innovation and competitiveness	To explore social capital and its effect on the networked firm innovation and competitiveness	Quantitative	The study find that the cognitive and structural dimensions of social capital exert positive effects on innovative and competitive performance, while the effects of the relational dimension are more varied. In fact, the relational dimension was positively associated with the formation of innovation, but displayed no significant correlation with the perception that firms had increased their innovativeness and competitiveness
2020	Cheah et al. (2020)	Search strategy, innovation and financial performance of firms in process industries	To examine the mediating role of product search strategy-financial performance link of firms within process industries, and understand the effect of public and private knowledge sources on their financial performance	Quantitative	The results show that shed light on how firms operating in process Industries can adopt deep external search strategy to draw external knowledge intensively from a few key knowledge sources to achieve superior financial performance through the adoption of complementary product and process innovation processes
2021	Ikpe et al. (2021)	Innovation Strategies and Firm Performance: A Study of Famine Mill Nigeria, Calabar	To investigate the role of innovation strategy on performance of Famine Flour Mill Calabar	Quantitative	The study concluded that marketability of our different segmented products and in-depth understanding of customer needs since is a critical source of competitive advantage
2019	Kiveu et al. (2019)	Effect of innovation on firm competitiveness: the case of manufacturing SMEs in Nairobi County, Kenya	To analyse the effect of innovation on firm competitiveness in manufacturing SMEs in Nairobi, Kenya	Quantitative	The study recommends the implementation of innovations with high novelty by SMEs to increase their competitiveness
2017	Tarus and Boit (2017)	Incremental Innovation And Firm's Competitive Advantage: A Quantitative Analysis Approach	To investigate the effect of Incremental innovation on a firm's competitive advantage	Mixed	The study indicates that in order for firms to gain competitive advantage they must adopt incremental innovations in their organizations
2017	Jovv-Llopis (2017)	What is the Role of Innovation Strategies? Evidence from Spanish Firms	To determine determinants of two alternative measures of innovative success/output by looking at firm is innovation strategies	Quantitative	The results also show that there is a good fit between the oriented strategy pursued by a firm and its innovation success

**Table 1** (continued)

Year	Authors name	Title	Study objective	Type of research approach	Findings
2017	Srivastava et al. (2017)	Influence of innovation competence on firm level competitiveness: an exploratory study	The study aims to explore the influence of the innovation on the competitive performance	Quantitative	The results discussed unique methodology of using aggregate index method for defining the innovation competence and competitiveness for the firms where the consistency of data is a major issue for such a complex phenomenon
2020	Bigliardi et al. (2020)	The influence of open innovation on firm performance	To investigate how the paradigm of open innovation influences firm performance and to provide suggestions for future research avenues	Mixed	The results shows that innovation is crucial for growth and business development, and represents a reliable way through which to gain competitiveness within the marketplace
2015	Tavassoli and Karlsson (2016)	Innovation strategies and firm performance: Simple or complex strategies?	To analyse the effect of various innovation strategies (ISs) of firms on their future performance, captured by labour productivity	Mixed	The main findings indicate that those firms that choose and afford to have complex ISs are better off in terms of their future productivity in comparison with those firms that choose not to innovative (base group) and in comparison with those firms that choose simple ISs
2021	Tali et al. (2021)	The impact of innovation competitive advantage on product quality for sustainable growth among SMEs	The purpose of this study was to investigate the impact of two components of innovation competitive advantage, that is, customer preference and strategic business model, on product quality for sustainable growth among SMEs	Quantitative	The results revealed that customer preference does not directly affect product quality; however, technology adoption mediates the relationship between customer preference and product quality
2018	Ungerma et al. (2018a, 2018b)	The Impact Of Marketing Innovation On The Competitiveness Of Enterprise- In The Context Of Industry	To identify the impacts of marketing innovations on competitiveness in connection with Industry 4.0 in business practice	Mixed	The results of the research showed that there are differences in how impacts are seen by SMEs and by large enterprises. The impacts are rated as most important by enterprises from the automotive industry with a European corporate culture
2020	Lestari et al. (2020)	Antecedents and Consequences of Innovation and Business Strategy on Performance and Competitive Advantage of SMEs	The study aims to develop concepts originating through empirical research models to build superior competitiveness and optimal performance achievement	Quantitative	The study also found that the link based on CCT, RBV, and TAM Theory is the right choice of theories, as the foundation of this study was very reliable and valid. Indeed, all of the grounded methods have implications both in theory and in its main application for the business in the online marketplace



**Table 1** (continued)

Year	Authors name	Title	Study objective	Type of research approach	Findings
2020	Ferreira et al. (2021)	Dynamic Capabilities and Mediating Effects of Innovation on the Competitive Advantage and Firm's Performance: the Moderating Role of Organizational Learning Capability	To investigate the impact of exploration and exploitation capabilities on competitive advantage (hereafter CA) and performance	Quantitative	The study contributes to the understanding of the direct and indirect impact of exploration and exploitation on CA variables; the mediating role of IC on CA and performance and the moderating effect of OLC in a transition economy
2022	Vijayakumar (2022)	Moderating Role of Commercial Capabilities on Firm Performance Through Innovative Capability in Manufacturing	To identify new ideas and work on ideas to implement them into their process to create new or improved products. Innovation	Mixed	The results of the study showed that the innovative capability of manufacturing MSMEs has a significant positive relationship with the firm's performance
2023	Yaskun et al. (2023)	The Effect Of Market Orientation, Entrepreneurial Orientation, Innovation And Competitive Advantage On Business Performance	To determine the effect of market orientation, entrepreneurial orientation, innovation, and competitive advantage on MSMEs (Micro Small and Medium Enterprises) business performance	Quantitative	The results of the Structural Equation Modelling evaluation with the univariate normality test showed an excellent critical skewness ratio value, and the kurtosis indicated data were normally distributed, and the data are feasible to use
2021	Borowski (2021)	Innovation strategy on the example of companies using bamboo	To discuss the importance of innovative strategies and presents the results of research carried out on the role of each employee group	Mixed	The cognitive and utilitarian value of completed research lies in the possibility of a broad look at the innovation strategy (including bamboo as an innovative material) and in the possibility of its implementation and application in various enterprises operating on the market
2023	Huang (2023)	The roles of competition on innovation efficiency and firm performance: Evidence from the Chinese manufacturing industry	The purpose of this study is to explore the complicated role of competition on innovation efficiency and firm performance	Quantitative	The results show that most Chinese manufacturing firms are inefficient in R&D activities. Competition forces firms to focus on the improvement of innovation efficiency, but at the same time, it also undermines collaboration and leads to unpredictable R&D results
2023	Thi et al. (2023)	Innovation and the Sustainable Competitive Advantage of Young Firms: A Strategy Implementation Approach	This study examines the impact of innovation at the strategy level on innovation at the process and system levels, which are considered to be forms of function-level innovation, based on the strategy implementation approach	Quantitative	The findings indicated that the four hypotheses about the effects of strategy innovation on process and system innovation and the effects of process and system innovation on the SCA of young firms in Vietnam were all confirmed

**Table 1** (continued)

Year	Authors name	Title	Study objective	Type of research approach	Findings
2023	Algarni et al. (2023)	The differential effects of potential and realized absorptive capacity on imitation and innovation strategies, and its impact on sustained competitive advantage	To investigate the differential antecedent roles of knowledge-based capabilities such as potential and realized absorptive capacity on imitation and innovation strategies, and to assess how such interactions lead firms to achieve a sustained competitive advantage	Quantitative	The results of this study fill a knowledge gap in the field of innovation management and provide empirical evidence for the interplay between absorptive capacity and the two complementary business strategies—innovation and imitation—which aids organizations in maintaining their competitive advantages
2016	Bayraktar (2017)	Competitive strategies, innovation, and firm performance: an empirical study in a developing economy environment	This paper studies the relationships between competitive strategies, innovation, and firm performance within the context of Turkish manufacturing companies	Quantitative	The results show that competitive strategies such as cost-leadership and differentiation can lead to innovation, which, in turn, increase firm performance
2022	Farida and Setiawan (2022)	Business Strategies and Competitive Advantage: The Role of Performance and Innovation	This study aims to examine the effect of business strategies to improve the competitive advantages of small and medium enterprises (SMEs)	Quantitative	Findings show that business strategies have a positive impact on competitive advantage. Better business strategies improve the competitive advantage of SMEs. Further, business performance and innovation also mediate the relationship between business strategies and competitive advantages. These results provide evidence of the importance of performance and innovation to improve the competitive advantage
2021	Nimfa et al. (2021)	The impact of innovation competitive advantage on product quality for sustainable growth among SMEs: an empirical analysis	The purpose of this study was to investigate the impact of two components of innovation competitive advantage, that is, customer preference and strategic business model, on product quality for sustainable growth among SMEs	Quantitative	The results revealed that customer preference does not directly affect product quality; however, technology adoption mediates the relationship between customer preference and product quality
2021	Edson and Muranda (2021)	The Effect of Competitive Strategies and Innovation on Firm Performance: A Study of Zimbabwean Textile and Clothing Firms	To investigate the impact of competitive strategies and innovation on firm performance	Quantitative	The results show that focus and differentiation strategies have a positive direct relationship with firm performance and innovation. However cost leadership has indirect relationship with firm performance and a positive relationship with innovation which in turn improves firm performance

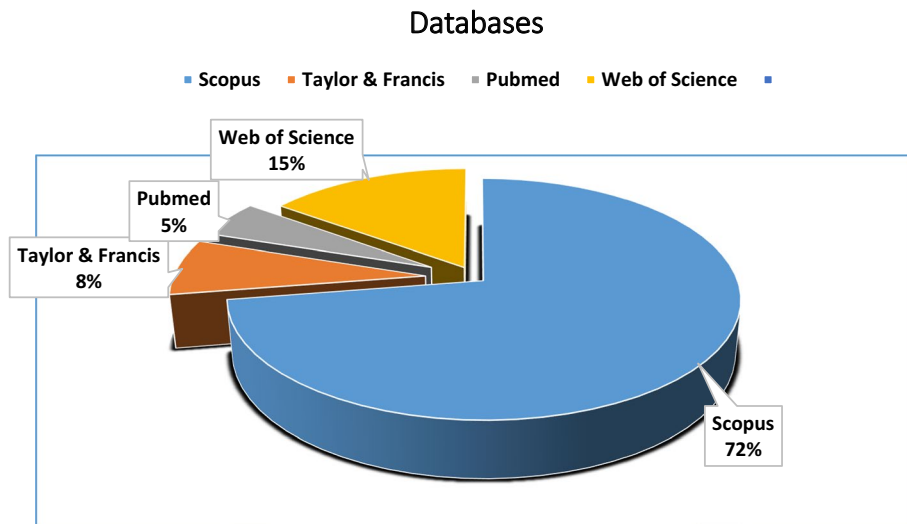
**Table 1** (continued)

Year	Authors name	Title	Study objective	Type of research approach	Findings
2022	Gao et al. (2018)	Innovation Strategy of Private Firms	To compare innovation strategies of public and private firms based on a large sample over the period 1997–2008	Quantitative	Findings that public firms' patents rely more on existing knowledge, are more exploitative, and are less likely in new technology classes, while private firms' patents are broader in scope and more exploratory
2023	Srisathan (2022)	Assessing the effectiveness of open innovation implementation strategies in the promotion of ambidextrous innovation in Thai small and medium sized enterprises	The aim of this study is to understand the implementation of open innovation processes by SMEs while highlighting two critical processes: open innovation implementation (OI) and open ambidextrous innovation practices (OAIIP)	Quantitative	The primary finding reveals and confirms a statistically significant positive relationship between the implementation of open innovation and the advancement of ambidextrous innovation practices. This relationship underlines the importance of embracing open innovation, as it fosters ambidextrous innovation, thereby enabling fresh perspectives, accelerating creativity, and facilitating knowledge exchange
2023	Salfore et al. (2023)	Business model innovation and firm performance: Evidence from manufacturing SMEs	The aim to investigate this relationship by collecting data from 264 manufacturing SMEs through structured questionnaires	Quantitative	The results indicated that changes in any component of the business model, namely value creation, value proposition, or value capture, had a positive and significant relationship with the performance of manufacturing SMEs
2023	Wongsansukcharoen et al. (2023)	Effect of innovations in human resource practices, innovation capabilities, and competitive advantage on small and medium enterprises' performance in Thailand	This study examines the performance of wholesale and retail small and medium enterprises in Thailand, which are integrating innovations in human resource practices, innovation capabilities, and competitive advantage	Quantitative	The significant success factors of innovations in human resource practices indirectly affect SME performance through the mediation of innovation capabilities and competitive advantage. These outcomes help develop long-term and business performance effectiveness, as the essential human resource factors and innovation capabilities practices of the current extremely competitive industry will intensify with the digital disruption era
2023	Carrasco-Carvajala et al. (2023)	Impact of innovation strategy, absorptive capacity, and open innovation on SME performance: A Chilean case study	This study analyses, in the context of SMEs, how absorptive capacity can favour incoming and outgoing open innovation practices, the mediating role that innovation strategy plays in this relationship, and the effect of open innovation practices on performance	Quantitative	The results obtained make a relevant contribution to the literature in two aspects: (1) absorptive capacity has a significant and positive influence on firms' strategies and outbound innovation practices and (2) firm strategies play a complete mediating role between absorptive capacity and inbound open innovation practices and a complementary mediating role between absorptive capacity and outbound open innovation practices

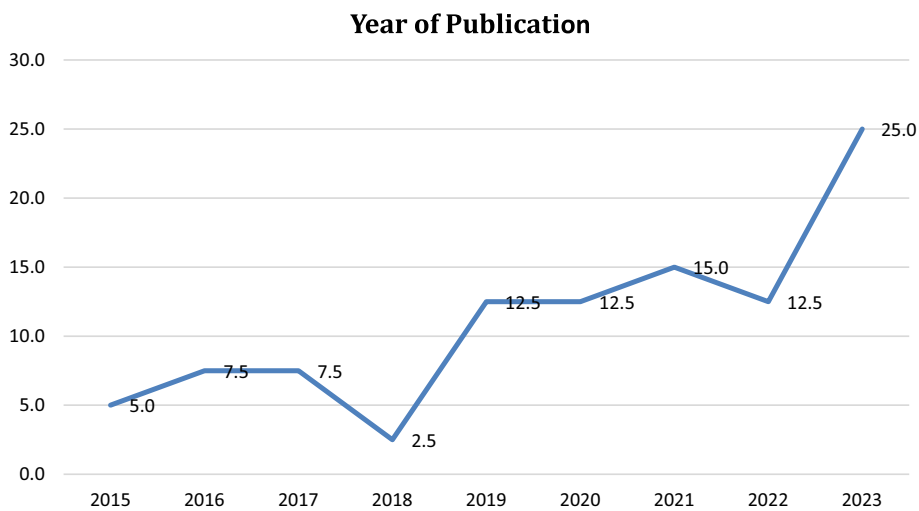
**Table 1** (continued)

Year	Authors name	Title	Study objective	Type of research approach	Findings
2023	Sangari et al. (2023)	Green concept of neuro marketing based on a systematic review using the bibliometric method	This research aimed to provide systematic bibliometric review of neuromarketing methodology up until the end of 2022, contributing to a comprehensive understanding of this concept	Bibliometric	The study presents an integrated framework merging neuromarketing findings with a green perspective, providing a holistic view of the relationship between neural processes and consumer decision-making. By incorporating neuroimaging data and physiological measurements, the framework offers a precise assessment of emotional reactions and their influence on consumer preferences
2023	Sana (2023)	The Effects Of Green House Gas Costs On Optimal Pricing And Production Lot size In An Imperfect Production System	The article aimed to deal with an imperfect production system considering costs for green-house gas (GHG) to determine the optimal reserve selling price, sales teams' efforts and production lot size	Mathematical Approach	The article results with an imperfect production system considering costs for green- house gas (GHG) to determine the optimal reserve selling price, sales teams' efforts and production lot size and a mathematical model is formulated and analyzed considering various cost factors and interval values of the key parameters. Finally, numerical illustrations are considered to justify the proposed model
2022	Sana (2022a)	Sale through dual channel retailing system- A mathematical approach	The article aimed to explore sale through dual channel retailing system with a mathematical approach	Mathematical approach	The findings of the proposed model can help managers/policymakers to understand the important of pricing and inventory level in dual channel marketing to achieve maximum profit in long-term sustainable businesses
2022	Sana (2022b)	A structural mathematical model on two echelon supply chain system	The main objective is to find out optimal prices and green quality in order to maximize the profit functions of individual and integrated systems	Mathematical approach	The results show that the mathematical and numerical analyses show that integrated system of manufacturer and retailer generates more profit than individual optimization. Generally speaking, procurement cost of green product is higher than regular products and it adds additional cost for green technology
2020	Sana (2020)	Price competition between green and non green products under corporate social responsible firm	The article aimed with a newsvendor inventory model in light of green product marketing of corporate social responsible firms	Mathematical approach	The results show that the consumers are to be attracted towards green product if price are fair and the CSR activities of the firm is more implemented to the society, i.e. the value of $r$ is higher

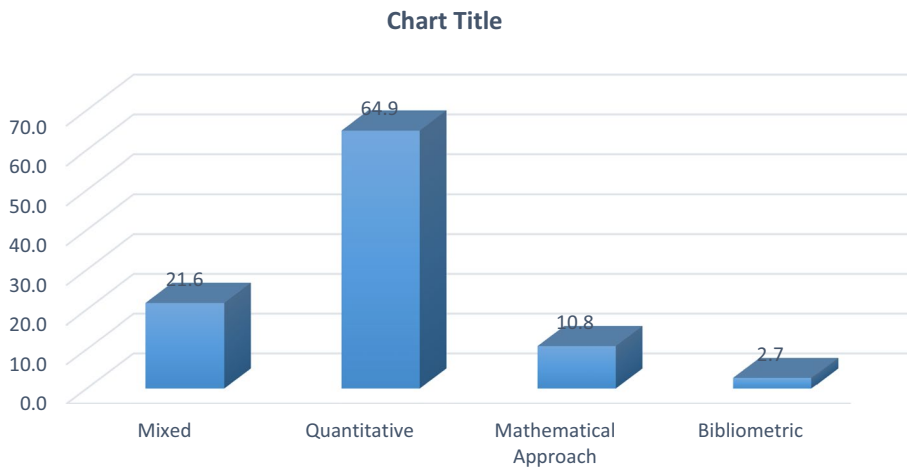
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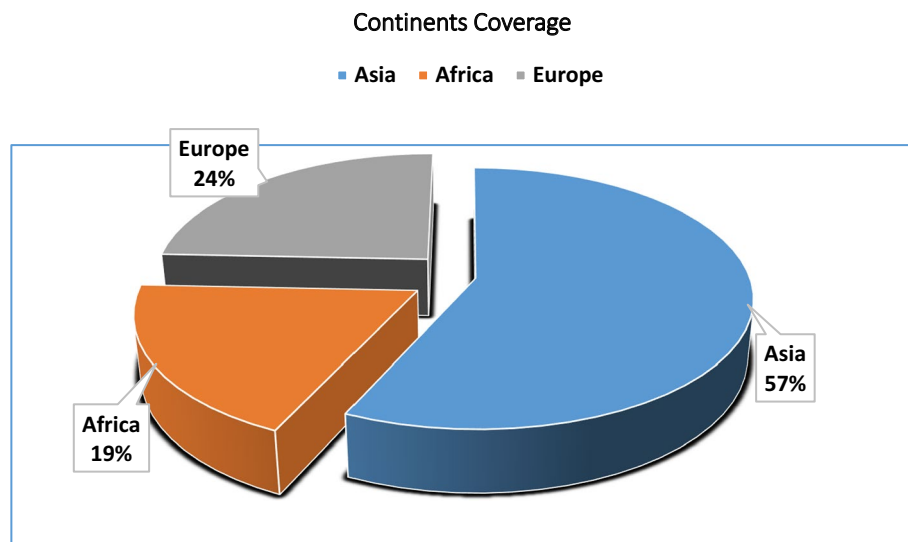
**Fig. 2** The databases for article search Source: by authors (2023)



**Fig. 3** Year of publication. Source: by authors (2023)



**Fig. 4** Type of article. Source: by authors (2023)



**Fig. 5** Geographical regions of the article covers. Source: by authors (2023)

innovation and firm competitiveness even if the only result of the study is a clearly described and its value for a manager should be discussed and shown clearly. Finally, reviewed studies have concluded that innovation strategy has a positive effect on firm competitiveness.

#### **Implications for future practices**

The study depicted that the current literature deals with the relationship between innovation strategy and firm competitiveness. I hope that there is an increasing interest and trends for more research on the link between different innovation strategies and firm competitiveness with their effects. The findings from this review show that a large majority of the reviewed studies has concluded that innovation strategy have a positive relationship and effect with firm competitiveness. Therefore, a great deal more research will be needed to examine the relationship between the consequences of various innovation strategies on company competitiveness.

#### **Limitation of the study**

This study included in this paper are those that used the keywords "Innovation", "Strategy", and "Firm Competitiveness" that were published between 2015 and 2023. The use of descriptive analysis as a form of data analysis places still another restriction on this investigation. Even though the researcher used a systematic approach to ensure there were no potential biases in the study, this method of data analysis is subject to potential subjectivity. Future research can therefore lessen the subjectivity issue by utilizing a variety of software tools, as these tools allow a researcher to lessen the subjectivity that frequently arises when using traditional content analysis and in the implementation of manual codifications done by an academic. Additionally, not used software allows researchers to find structures, recurrences, and patterns in the text that may not have been anticipated beforehand. Finally, this systematic review

does not incorporate sector categories in their analysis to determine the unique finding implications.

### Future research direction

This study is thought to present a number of opportunities for future innovation strategy and firm competitiveness research. First, this study offers the chance to empirically examine innovation strategy and firm competitiveness from various angles. Therefore, this study suggests to review all models with different industries. Despite a rapid recent increase in publications and special issue calls, many opportune research avenues within the innovation strategy and firm competitiveness field require further investigation.

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### Author contributions

All authors oversaw the entire process, from literature selection and search to report preparation and policy implications. The authors contributed to all investigational efforts related to the study, as well as report writing and changes based on reviewer comments.

### Funding

Not applicable.

### Availability of data and materials

The authors are ready to share the data at any time.

### Declarations

#### Competing interests

No conflict of interest was reported by the authors.

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