

Dynamic innovation model for ambidextrous SMEs: Insights from a bibliometrics analysis



Authors:

Darlington T. Chigori¹ 
 Willie Chinyamurindi¹ 
 Ellen C. Rungani¹ 

Affiliations:

¹Department of Business Management, Faculty of Management and Commerce, University of Fort Hare, East London, South Africa

Research Project Registration:

Project Number:
 ADE011SMDE01

Corresponding author:

Darlington Chigori,
 dchigori@ufh.ac.za

Dates:

Received: 16 Oct. 2023
 Accepted: 09 Jan. 2024
 Published: 11 Mar. 2024

How to cite this article:

Chigori, D.T., Chinyamurindi, W., & Rungani, E.C. (2024). Dynamic innovation model for ambidextrous SMEs: Insights from a bibliometrics analysis. *South African Journal of Business Management*, 55(1), a4282. <https://doi.org/10.4102/sajbm.v55i1.4282>

Copyright:

© 2024. The Authors.
 Licensee: AOSIS. This work is licensed under the Creative Commons Attribution License.

Read online:



Scan this QR code with your smart phone or mobile device to read online.

Purpose: Ambidextrous SME innovations and technology models have led to success stories in the past. They face new challenges due to increasing uncertainty in the business environment. Purpose: The study reviews ambidexterity literature to determine trends and themes existing in the body of literature on ambidexterity.

Design/methodology/approach: The study employed a bibliometric and Vosviewer analysis of 1808 articles published on Scopus database from 1999–2022. The study used several indicators including data overview (scientific production in the area and three field-plot), conceptual structure (co-occurrence network, thematic map, and evolution), keyword analysis, and thematic mapping.

Findings/results: The analysis indicated five main themes on which the ambidexterity literature focuses. The results revealed that the key themes in ambidexterity literature are continuous innovation, knowledge management, dynamic capabilities, entrepreneurial and market orientation, enterprise resource management (ERM), and business performance.

Practical implications: The review highlighted that SMEs struggle more in dynamic business environments. Business changes in recent years have proved the importance of innovation, ERM, knowledge management, and dynamic capabilities as beneficial factors for achieving enhanced performance.

Originality/value: The analysis reveals several links in literature and valuable insights into possible models that can be scaled up and replicated across different industries. Themes in the domain mainly focussed on knowledge management, firm performance, digital transformation, open innovation, dynamic capabilities as well as entrepreneurial and marketing orientation. The proposed business model can assist SMEs owners and managers in swiftly adapting to unpredictability in the changing business climate caused by the recent pattern of events.

Keywords: innovation; ambidexterity; sustainability; digital technology; business performance.

Introduction

Small and medium enterprises (SMEs) endlessly face uncertain challenges because of the swiftly changing business environment (Tyna, 2023). These challenges are known to stifle SMEs' operations and maintain their performance in dynamic environments. Responding to competitive pressures, most SMEs are compelled to adopt newer management tools and techniques to stay competitively relevant and achieve sustainable advantage (Jacobs & Maritz, 2020). Additionally, SMEs face extended pressures and adapt to maintain continuity by securing new cash streams and addressing the constantly changing business environment (Gregurec et al., 2021). It is difficult for SMEs to determine their sustainability efforts and ascertain routes to improve business sustainability.

Ragazou et al. (2022) suggest that ambidexterity is crucial in devising means through which SMEs can manoeuvre in the changing business environment. Ambidexterity enables businesses to exploit existing skills and explore new opportunities. The concept of ambidexterity entails the achievement of opposing objectives: engaging in new opportunities versus undertaking existing competencies (Cheah & Tan, 2023; Katou et al., 2023). This type of strategy embodies a different methodology based on the principles of adaptability and flexibility. Despite the importance of ambidexterity business models, few of the existing business models provide a platform for SMEs to improve their company performance, development, and sustainability in an increasingly competitive and uncertain business environment. Small and medium enterprises now require

fresh perspectives to enable flexibility, swiftness, and adaptability (Adomako & Ahsan, 2022). While ambidexterity models are considered robust in the changing business environment, fragmented ideas continue to exist in the body of knowledge (Hernaus et al., 2023; Trieu et al., 2023). Various studies have shown that ambidexterity may be an ineffective tool given the limited resources; it would be better if the company focused on exploitation or exploration (Chakma et al., 2023).

Despite these insightful suggestions from pioneering studies, several solutions for ambidexterity problems remain unresolved because of the complexity of balancing exploration and exploitation under the context of resource constraints, especially for SMEs. Considering the significant costs of maintaining such separate systems, resource-constrained SMEs may find it more profitable to focus on either exploration or exploitation. Indeed, focusing is frequently extremely effective in SMEs, with some SMEs regularly engaging in exploration and challenging the status quo with radically new ideas, while others consistently exploiting narrow niches. Contradictory empirical findings illustrate the absence of conceptual clarity: while some research reveals that ambidexterity is advantageous compared to exploration and exploitation in SMEs (e.g., Solís-Molina et al., 2018), others establish little support for the idea (e.g., Partanen et al., 2019). Generally, this uncertainty raises worries that SMEs may gain more from either exploration or exploitation. Furthermore, based on the preceding argument, it is ambiguous under what circumstances exploration and exploitation become more or less advantageous for SMEs.

In this regard, the development of an all-encompassing business model may serve as a significant foothold for SMEs to increase their performance, growth, and sustainability. Recent studies related to the means of superior performance, growth, and sustainability of firms highlight the need to exploit existing capabilities to create gradually improved exploitative innovations while at the same time successfully exploring new competencies and technologies to create explorative breakthrough innovations.

Literature review

Ambidexterity in small and medium enterprises

Ambidexterity was originally theorised as a leading aspect in the continued existence and success of any business. It is centred on the principle that 'the capacity of a business to exploit its existing capabilities and explore new-found opportunities signifies the fundamental of organisation evolution' (Mehrabani et al., 2019; Solís-Molina et al., 2018). The effect of ambidexterity has been a subject of importance in academic literature. Some researchers claim that ambidexterity represents the most dominant predictor of innovation (Posch & Garaus, 2019; de Guinea & Raymond, 2020). Through ambidexterity, businesses are known to give birth to prominent innovations that are considered the

ultimate solution to today's business challenges (Kassotaki et al., 2019; Posch & Garaus, 2019). Today's firms recognise the fact that the business environment has radically transformed compared to the past when changes were episodic. Present-day SMEs also face similar threats. The constant changes result in endless interruption which means that SMEs should frequently adjust to the changing environment.

Open to the elements of dynamic environments, these SMEs are obliged to handle the pressure between restructuring their existing interests and creating innovative business ideas (Partanen et al., 2019). Literature advocates a comprehensive perspective on the benefit of participating in both exploitation and exploration, two isolated, consistent, and non-identical sets of innovation activities. Additionally, Partanen et al. (2019) believe that the importance of ambidexterity tends to be magnified in the context of SMEs. As a result, various scholars reason that resource-constrained SMEs are better focusing on either exploration or exploitation (Zhang et al., 2020), whereas others suggest that concurrent pursuit of exploitation and exploration can also take place in SMEs (Keyhani et al., 2022) and these specific alliances enable SMEs to pursue ambidexterity. Boronat-Navarro et al. (2021) suggest that SMEs perform better if they engage in exploration-exploitation capabilities.

These capabilities entail a unique set of skills essential to survive (Jakhar et al., 2020) or enhance sustainable competitive advantage. Ambidexterity describes a firm's ability to perform explorative and exploitative behaviour (Donbesuur et al., 2020; Kassotaki et al., 2019). Even though previous literature focuses more on larger firms (Ardito et al., 2021), analysis shows that SMEs struggle to strike a balance between exploitation and exploration (Rustenburg, 2017). These studies emphasise the value of ambidexterity as a strategy for increasing performance and ensuring a firm's longevity (Alcalde-Heras et al., 2019; Rustenburg, 2017).

Ambidexterity has also been suggested to have a positive impact on the performance of SMEs in emerging economies including South Africa (SA) (Mankgele, 2023). The research further suggests that ambidexterity contributes to sustainable organisational performance. Additionally, SMEs are advised to focus on ambidextrous strategies for sustaining performance, especially in turbulent environments (Andrade et al., 2021; Frank et al., 2017). This suggests that SMEs in SA should adopt both learning strategies ambidexterity, exploitative and exploratory, to gain a greater advantage in terms of innovation performance. Therefore, ambidexterity plays a crucial role in enhancing the performance of South African SMEs, particularly in terms of innovation and sustainability.

Though ambidexterity has been emphasised in the literature, SMEs also require more to perform exploration, exploitation, or collaboration. Combining different capabilities is

supposed to avoid both the limits of being an SME and the inner conflict that ambidexterity imposes (Im et al., 2019; Page et al., 2021). As a result, different proxies are mandatory for successful SME ambidexterity. Ambidexterity embodies robust theoretical strategies enabling enhanced performance and profitability (Naughton et al., 2020; Trieu et al., 2023), revenue growth (Paschen et al., 2020), survival tactics in an uncertain business environment (Priyono et al., 2020), and innovation performance (Ceptureanu & Ceptureanu, 2021; Ferraris et al., 2021). On the contrary, literature raises the theoretical applicability of ambidexterity regarding SMEs considering their varying constraint (Boronat-Navarro et al., 2021; García-Pérez-de-Lema et al., 2021). Different constraints make SMEs vulnerable to external shocks because of internal issues.

These internal issues include limited access to financial resources, a lack of diversification in products or services, and inadequate risk-management strategies. The mentioned factors increase SMEs' vulnerability to external shocks, and supply chain disruptions (Naughton et al., 2020; Trieu et al., 2023). Considering the challenges mentioned, SMEs should focus all of their efforts and resources on all-encompassing models rather than single-focused models because of the environmental dynamism and inherent characteristics of SMEs. This approach allows SMEs to adapt to changing market conditions more effectively and capitalise on emerging opportunities (Andrade et al., 2021; Yunita, 2023). Additionally, by adopting all-encompassing models, SMEs can enhance their competitiveness and achieve sustainable growth in the long run.

Uncertainty and changing business environment

A firm's success relies on its internal and external business environment attributes. Such internal and external business environmental attributes continue to threaten the existence of SMEs. Uncertainty and changing business environmental factors like technology, product preferences, and regulatory changes, all continue to threaten business existence and survival. This type of uncertainty and changing business environment often lead to external change and difficulty for the management to plan and make decisions for upcoming events. To adapt to such environments, SMEs must design adaptive systems with agility and flexibility. Key decision-makers must process more information to cope with dynamism and adapt to emerging changes. Higher levels of dynamism may result in a greater exploration orientation, as organisations use more information searches and boundary-spanning data to develop new and timely approaches to deal with external developments.

In dynamic and uncertain environments, it is challenging to identify, measure, or predict cause-effect relationships between the environment and the firm. Small and medium enterprises often make it up as they go along, making it difficult to rely on well-learned scripts or prescribed sets of procedures. This presents both a decision-making

and implementation challenge. Uncertainty and changing business environment reduce the periods when current resource configurations provide a competitive edge, placing a higher burden on the management to dynamically redesign the firm's bundle of resources and capabilities (Nielsen et al., 2021). This not only poses a decision-making challenge but also an implementation challenge. Ambidexterity is considered crucial for firms facing uncertainty and changing business environment enabling SMEs to swiftly respond to market disruptions through exploratory innovation.

Thus, considering ambidexterity can be configured in different ways, so that SMEs may lean more or less towards an ambidextrous approach in their operations. This flexibility allows SMEs to adapt their strategies based on their specific needs and goals. It also enables them to strike a balance between exploration and exploitation, maximising both innovation and efficiency in their operations. Further, although a dual-track strategy on the exploration-exploitation approach may be ideal, change may be inevitable over time. As market conditions and competitive landscapes evolve, SMEs in emerging and volatile markets may need to reassess their approach and potentially shift their focus towards a more innovative ambidextrous model. This adaptability ensures that SMEs remain agile and responsive to external factors, allowing them to maintain a competitive edge in the long run. Additionally, by periodically re-evaluating their strategies, SMEs can identify new opportunities for growth and stay ahead of industry trends. This requires new business models. Thus, the following sections seek to address this.

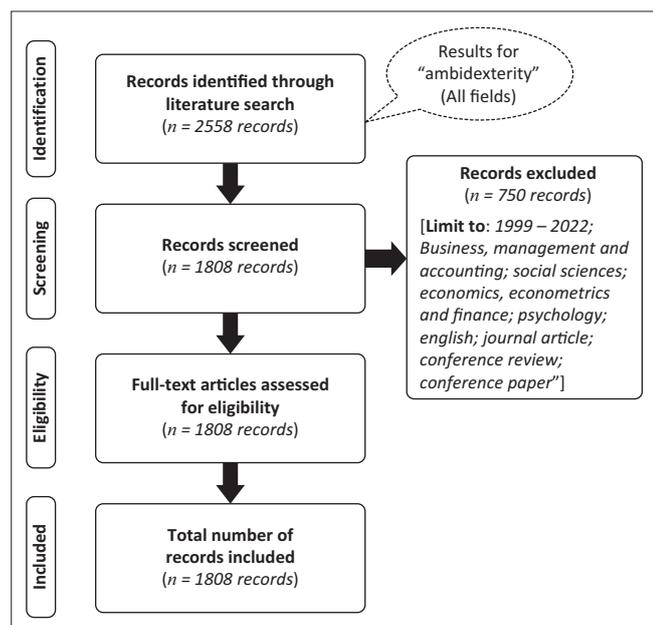
Methodology

The article statistically analysed data extracted from the Scopus database. The database used is hosted by Elsevier. The database is the world's largest 'peer-reviewed' host of academic journals in various disciplines of high-impact research. It analyses scientific research data, including the number of articles published and citation count. Scopus is a high-ranked database that provides high-quality academic research articles, books, and conference articles (Raisig, 1962; Baas et al., 2020) compared to other databases such as Google Scholar and Web of Science. According to McCullough (2022), there are over 87 million articles published in Scopus. The database contains each title, volume number, publisher, keyword (cited in the title, abstract, and document), and the total citations. It is assumed that a journal article contains some keywords; however, because of the continuous changes in the field of science, an older article might not have mentioned any of those words. Scopus also offers a range of tools for analysing the impact of scientific publications, such as the h-index, frequency charts, and statistical analysis tools. To look up data for bibliometric analysis, the author used the keyword 'ambidexterity' to search peer-reviewed articles, conference reviews, and conference papers.

This research attempts to employ bibliometric analysis using a biblioshiny (Aria & Cuccurullo, 2017) application to understand the literature of the study. The scope of the bibliometric analysis was based on RStudio software (version-2022.07.2+576) to understand the domain of ambidexterity and digitisation research trends, as well as other related indicators, by analysing manuscripts published in Scopus on the research idea. In addition, the biblioshiny and VOSviewer (Van Eck & Waltman, 2010) software facilitated in the mapping, verification, and identification of the research gaps and opportunities for SMEs through the integration of digital transformation into their business models. The following section, therefore, represents a literature map to understand the direction of research on ambidexterity and innovation.

Validation and data screening

Figure 1 furnishes aspects of the keyword search employed to query the Scopus database between 1999 and 2022. The selected dates were considered for searching ambidexterity because they represent a significant time span to capture the evolution and trends of research on ambidexterity. The search results reveal the preliminary search number of findings obtained based on the search of the term 'ambidexterity' alone. To ensure that the correct articles were selected, only articles from business, management and accounting, social sciences, economics, econometrics, and finance disciplines were included in the selection. Books and book chapters were also excluded because of a lack of bibliometric data for these publications (Churruca et al., 2019). The results of the identified literature search showed a total of 2558 records. The observed sample from the initial literature search were populated records that were not all relevant to the primary purpose of the study. Further



Source: Aria, M., & Cuccurullo, C. (2017). Bibliometric: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>

FIGURE 1: PRISMA flowchart based on the search 'ambidexterity'.

refinement was required (see Figure 1) to ensure that only relevant records were included. Based on the varying screening steps in Figure 1, and criteria applied using PRISMA (Aria & Cuccurullo, 2017), the literature search was refined to 1808 records. The final records included Journal Articles, Conference papers, and Reviewed papers. The screening of records led to the exclusion of 750 records from other discipline such as health sciences, engineering, mathematics, computer science, and energy. Thus, the systematic inclusion of relevant documents and exclusion of those beyond the study scope led to a total number of 1808 documents for analysis.

Literature mapping and systematic review (1999–2022)

Different authors have contributed to the body of literature on ambidexterity effects in SMEs through literature reviews and empirical studies (Amjad & Nor, 2020; Ragazou et al., 2022; Sabando-Vera et al., 2022). In this context, interest has increased in survival tactics for SMEs globally, revealing new research gaps and different means of adaptation to technological changes. In spite of these scientific contributions, the composition and development of knowledge on digital ambidexterity in SMEs is rare. Hence, performing a bibliometric review enables a global review of the literature that forms the core basic structure. The current analysis complements and highlights the research direction and gap to be addressed in the current study.

The constantly changing business environment led to unprecedented challenges which compelled businesses to redefine affected business activities globally. To address the consequences of the change, most SMEs have adopted strategies to improve their development and impact on the business environment. The article proposes an empirical gap through a bibliometric analysis, of ambidexterity literature centred on the three phases including, ambidexterity, performance, and SMEs.

The analysis of bibliometrics was accomplished by examining articles that were published from 1999 to 2022. The bibliometric analysis used different indicators such as the studied field, co-occurrence analysis, author's keyword analysis, density analysis, and thematic mapping. Biblioshiny and Vosviewer were used to enable visualisations of results from the empirical literature analysis. The sources that were analysed showed that most documents were published in developed countries. South Africa indicated the lowest number of articles on the topic. The literature analysis provides insights into the state of ambidexterity literature under analysis and gaps existing in the literature. These contribute to the creation of a technology innovation model that integrates ambidexterity, digitisation business performance, and open innovation, too. The proposed model assists SMEs to swiftly conform to the dynamic business environment. An extensively used, rigorous approach

(bibliometric analysis) to the exploration and analysis of massive amounts of scientific data (Donthu et al., 2021) is employed to unpack different research constituents in the research field, which can include authors, institutions, countries, and academic articles.

Development and growth of ambidexterity literature

In the current bibliometric analysis, a total of 1808 articles from Scopus within the time span 1999–2022 were analysed. Figure 2 shows the yearly scientific production of the ambidexterity literature in SMEs over the mentioned period. The graph shows that ambidexterity literature only started increasing from the year 2000. Though early scientific literature exists, the results of scientific production show that the concept of ambidexterity gained momentum in early 2002. This is shown through a high-pitched growth of publications from early 2005 in the study subject. Though the increase is constant, Figure 3 also shows that production publication of ambidexterity literature was confronted by temporal breaks and further re-invigoration of the discipline. This led to further growth of the discipline over the years. The illustration in Figure 2 further shows that publications of ambidexterity have grown significantly over 20 years.

Other authors have suggested that the growth in literature in the above-mentioned discipline has been created by the pandemic (Pellegrini et al., 2022; Ragazou et al., 2022; Sabando-Vera et al., 2022). The sources have indicated that the growth in the literature was in a bid to find mitigating measures to address dynamic business challenges and the need for SMEs to reinvent their business models. The re-invented business models facilitate SMEs to align their processes and management requirements while aligning directly to the transformations in the business environment. Though the literature suggests that SMEs should adopt new business models that are characterised by open innovation, the pandemic highlighted that SMEs and other businesses need to constantly align themselves with the changing business environment. Adapting to constantly changing business circumstances is required through digital

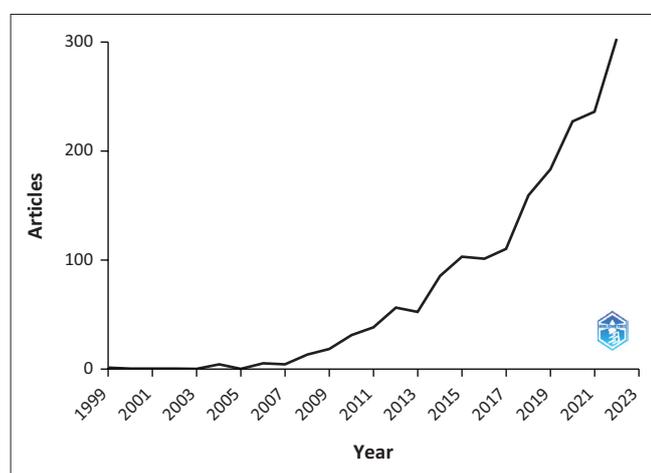


FIGURE 2: Scientific production of ambidexterity literature.

ambidexterity, co-creation, and improving network capabilities. This new direction coerces SMEs to take risks while also addressing their resource-constraint challenges and innovating through alliances leading to sustainable business performance.

The journals with the highest number of published articles on the subject of ambidexterity and business performance themes within the time span 1999–2022 are displayed in Figure 3. Understanding the trends in focus journals for ambidexterity research facilitates understanding where most articles are being published. The *Journal of Business Research* displayed the highest number of publications on ambidexterity within the investigated period. The *Switzerland journal* tiered as the second with 44 publications while the *International Journal of Human Resource Management* tailed with 29 publications. The results in Figure 2 also revealed that *Transactions Journal of Engineering Management* included 27 published articles followed by *Management Decisions* which published 25 articles. Twelve of the other journals showed that they were at par with either one or two of the other journals. For instance, the *Journal of Industrial Marketing* and *Journal of International Business Review* were at par with 24 published articles, as well as the *Journal of Long-Range Planning* and *Technological Forecasting and Social Change* which both had 23 publications over the period. Similarly, the *Business Process Management Journal*, the *European Management Journal*, the *International Journal of Innovation Management* and the *Journal of Product Innovation Management* all had 19 published articles within the period under observation. In general, the journals included the body of research, with suggestions for different businesses such as ambidexterity, innovation, research and development, competitive strategy, and other significant areas. In addition, several published articles existed in different study areas, suggesting that SMEs require continuous revision of their business models. The current metrics in Figure 1 and Figure 2 show the significance and broad influence of ambidexterity for SMEs.

Inter-country production map

In a bid to understand the research gap in the literature, bibliometric analysis was employed to assess inter-country scientific production of article publications on ambidexterity in SMEs on the area of focus. The results revealed an inter-continental difference in publications among countries. The findings showed that fewer publications were made on the African continent compared to the rest of the world. On the other hand, this may also show that fewer publications from Africa do not reach top tier journals. The results place most ambidexterity studies in the USA, Europe, Asia, and Australia. While most SMEs on the African continent struggle to compete on international platforms, the current evidence highlights an area for newer business models to assist SMEs in gaining a competitive advantage through ambidextrous activities.

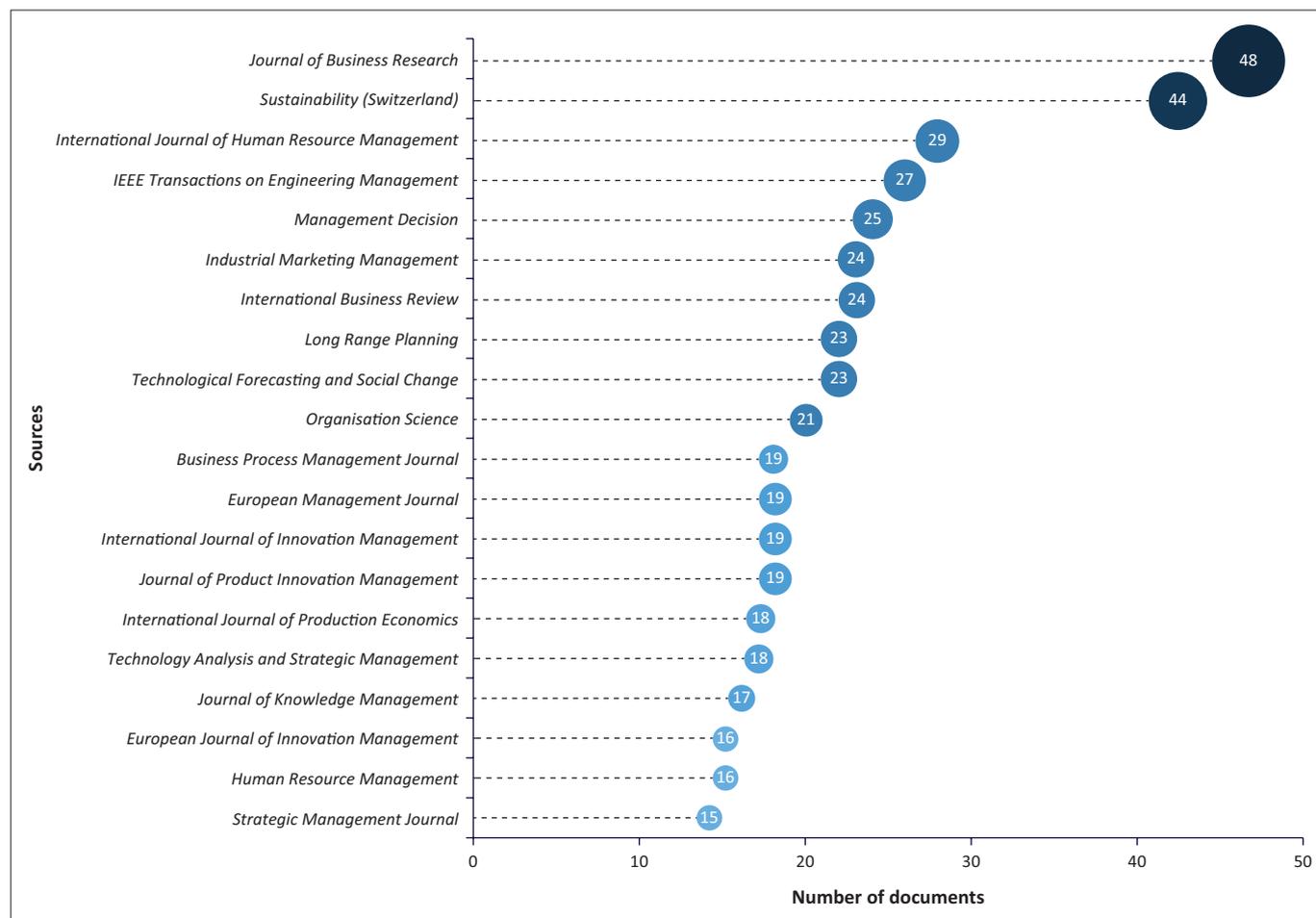


FIGURE 3: Published articles per journal.

Therefore, the results provide evidence of a relatively new focus in the African management research domain, as production levels are low on the continent. Figure 4 also shows the gap in the literature on ambidexterity compared to other continents. The lack of substantial literature in Africa highlights an emergency for academic scholars and practitioners to explore the subject of ambidexterity and how it can thus enhance business performance. China has the most publications (686) followed by the United States (US) with the second-highest number of publications (636). The publications of China and the US have integrated the participation of 27 countries, mainly the United Kingdom (UK) and Australia (154 and 201 publications respectively).

This type of analysis was performed according to article production per country in the field of study, facilitating the understanding of different existing related research between countries for the generation of knowledge. For example, Figure 4 displays the summary of total production for 20 years among different countries. Most developed countries had higher article production supporting the idea that ambidexterity is a niche area within the African continent, Russian Federation, and partly in South America. For instance, it can be seen in Figure 4 that South Africa leads total article production in Africa with 18 article publications, followed by Nigeria with 11 publications. Most of the other

countries have six articles or less published within the period under investigation. This could also be as a result of publications that are not linked to journals in the Scopus database.

The country scientific production map showed 10 countries including the US, UK, Italy, Spain, France, Germany, India, Brazil, Canada, and China. It is worth highlighting that China and the US are the world's biggest publishers of ambidexterity and business performance. The results suggest that ambidexterity is more pronounced in the US, China, and Central Europe. The following section will further highlight geographical citation contributions.

Country collaboration analysis

A frequent characteristic among the various countries is the low level of citations. An increased level of articles being cited highlights the importance of the discipline and more related topics covered. However, the goal of this review is to highlight the existing gap that has appeared in recent years to help SMEs to survive. Thus, it is significant to conduct a citation analysis of ambidexterity and SMEs' business performance to show key areas covered in the subject and the management research field. Thus, an inter-country citation analysis in conjunction with linking the author to the affiliated country and the key discipline was needed. This

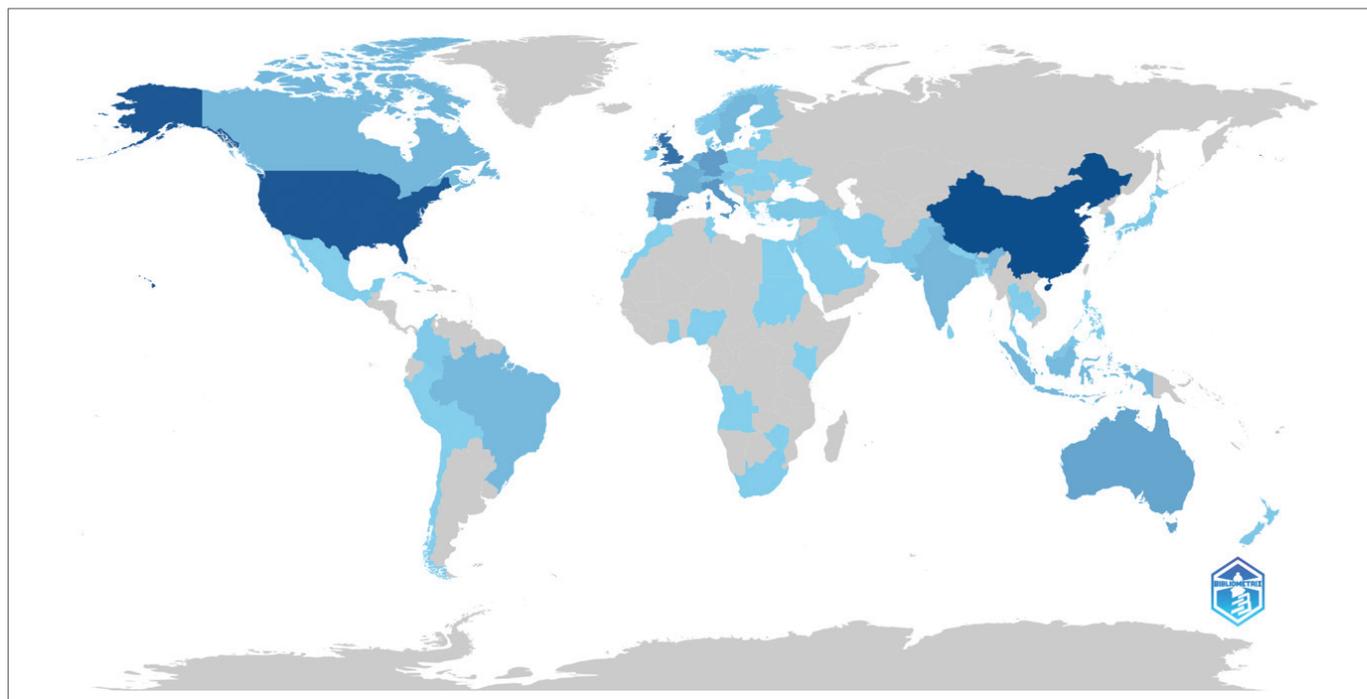


FIGURE 4: Country scientific production map.

enabled the researcher to map literature and show more definite gaps in South African literature and the African continent at large. Thus, reference to the current section was made through inference from Figure 5 and Table 1.

The US ranks first with the highest number of citations (17470) on ambidexterity globally. The US can be viewed as the centre of attention for many businesses globally, with the world's most international and connected businesses presenting unmatched access to international markets. As such, the various businesses offer an international platform for human resources, investment, and networking capability worldwide. Moreover, the US is mainly attractive to human resources from various parts of the world, who form a larger body of academic experts. There is intense activity in the US from businesses, of which some are business research centres, such as the *Harvard Business Review* of the University of Harvard. Opportunities like this present a situation for academics who study business management and strategy to be alert in distinguishing upcoming trends in different business subject areas.

Ambidextrous activities are means for businesses to alleviate different business challenges introduced in the research area by an American expert named Duncan (1976). Similarly, Turner et al. (2013) in their article 'Ambidexterity in Managing Business Projects' argue the supremacy of ambidextrous practices in businesses in different industries. Additionally, Turner and Lee-Kelley (2013) further unpack the ambidexterity theory adding to the body of knowledge and how ambidexterity is significant in dynamic situations. It is noteworthy that the literature provided by di Muro et al. (2021) and Turner et al. (2016) in collaboration with Turner, shows the strength of understanding the dynamics of

ambidextrous practices and their contribution to their businesses. Thus, this study reviewed US literature and affiliated authors which was structured to highlight the benefits of ambidexterity on business functional areas or projects.

The UK ranked second followed by China with a total of 5729 and 3512 citations respectively (see Table 1). The UK and China are at the centre of attention for US businesses in other countries worldwide. In addition, Ragazou et al. (2022) distinguished that London being the world's central business hub helps business relationships between different countries globally leading to a wide network of academics. Similarly, China is well-known as the world manufacturing hub (Richter, 2021). This status quo helps Chinese researchers investigate the area of ambidexterity and SMEs business performance leading to the identification of new developments appropriate for addressing business issues affecting SMEs. Various citations affiliated with both China and the UK emphasise the importance of knowledge management (Gil-Marques & Moreno-Luzon, 2020), firm's capabilities (Escorcia-Caballero et al., 2022), radical innovation, trust-firm performance (Chams-Anturi et al., 2020), and leadership ambidexterity (Salas Vallina et al., 2019). Digital ambidexterity, network capabilities, and value creation strategies can act as a tool for businesses to handle different challenges confronting SMEs. It is worth mentioning that the literature highlights the strength in knowledge management, dynamic capabilities, and other issues confronting SMEs' executives in understanding ambidextrous practices and their contribution to SMEs.

The remaining European and other Asian countries also highlighted higher article citations per year in the field of

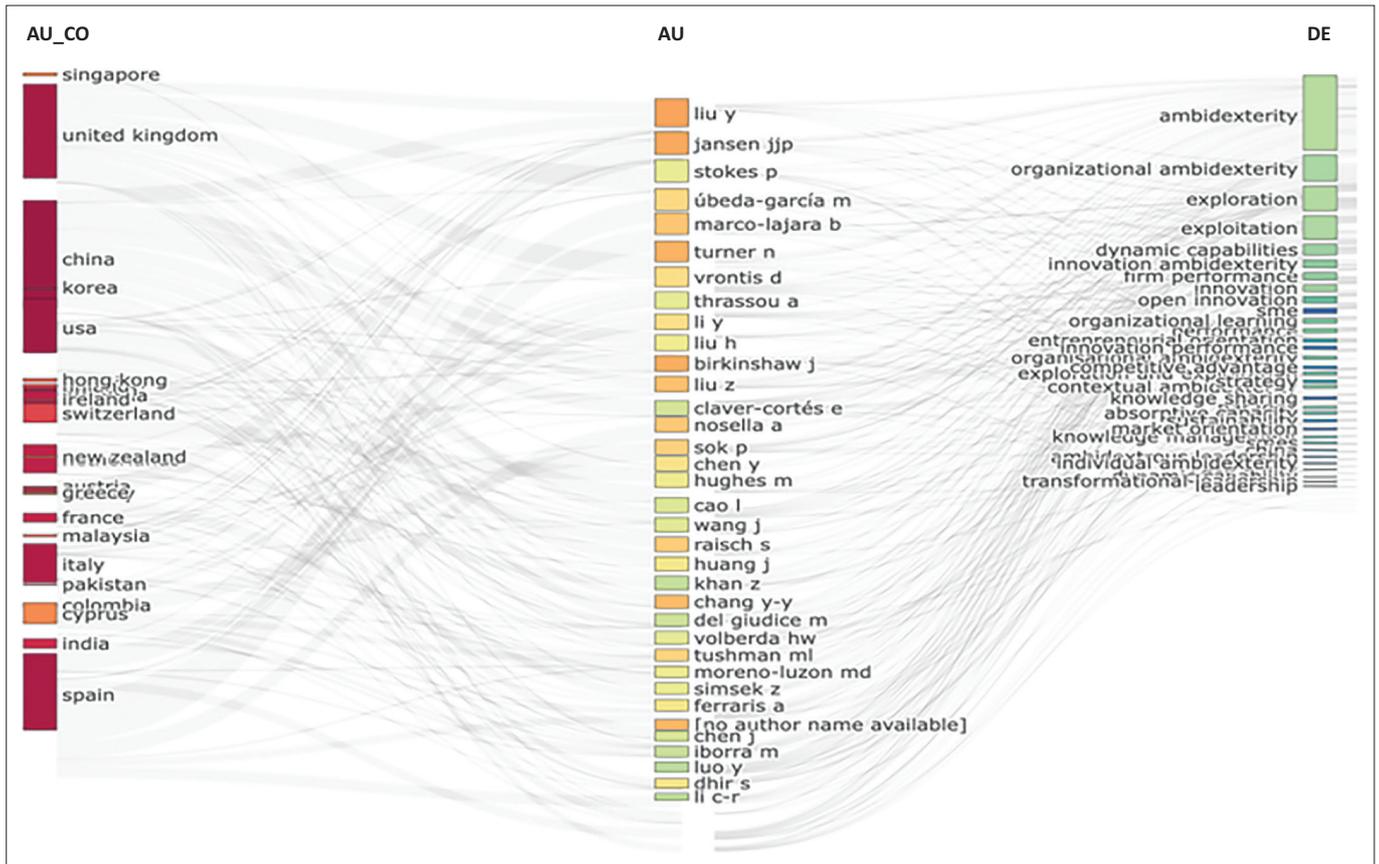


FIGURE 5: Inter-country author affiliation and area of focus.

ambidexterity and SMEs' business performance. Most of the countries are in Europe and Asia. They enjoy spill over effects from being at strategic points between China, the UK, and the US. This has seen most countries within the proximity of their route with higher total citations ranging from 100 citations to just below 3500 citations over the study period. Thus, considering the UK's competitive economy globally, collaborations may be a result of academics working together to enhance ambidexterity processes as shown in Figure 5 depicting country and author affiliations.

In reference to the context of the study geography (SA), it was also necessary to observe the country's scientific production in the research field of ambidexterity of SMEs. The study of ambidexterity in the context of South African geography might give useful insights into handling the country's numerous and complicated difficulties. It provides a framework for balancing competing interests, integrating multiple points of view, and promoting long-term growth in a continuously changing socioeconomic and environmental setting. The results in Table 1 present a low rate of adoption of ambidexterity in SA and the rest of the continent compared to the rest of the world. Figure 1 shows that an average per year of 5.50 citations exist in SA accompanied by a total citation of 44 for 20 years. The most cited article publications are not from SA, but from Brazil, the US, and the rest of the world. Though the greater world is advancing in understanding the concept of ambidexterity,

SA and the rest of the continent continue to trail behind Asia, Europe, Australia, and American backyards. Thus, it is surprising that while the world propels ambidexterity globally, a considerable number of countries on the African continent continue to linger behind the rest of the world. Brathen et al. (2021) suggest that ambidexterity offers a variety of business opportunities for SMEs and a likely wider transformation across the economy. In SA, SMEs that embrace ambidexterity and integrate emerging technologies into their business model can manage to improve their competitiveness. However, the literature landscape of SME in SA presents shortcomings of SMEs including: (1) resource constraints, (2) SMEs' skills shortages, and (3) relationship management capabilities. This presents a gap in SA's literature and the need for digital ambidexterity, showing the role of network capability and how value co-creation can enable SMEs to enhance their business performance.

Geographic collaboration between scholars

The country's scientific production highlighted weak engagement and less research in Africa on ambidexterity and SMEs' business performance. Figure 6 shows the geographical collaboration between the academics on ambidexterity research of SMEs on a global scale. The diagramming of the scientific collaboration of the academics on a global scale was generated through the use of the Biblioshiny statistical tool. The geographical collaboration examination aims to identify the shared configuration of the academic community in the ambidexterity field. The various meeting points in Figure 6

TABLE 1: Inter-country production and total citations related to ambidexterity.

Country	Total citations	Average citations per year
United States	17 470	10 524
United Kingdom	5729	4583
China	3512	1649
Switzerland	3256	17 137
Netherlands	3041	6911
New Zealand	2361	29 513
Germany	1815	2486
Italy	1766	2676
Spain	1666	2109
Canada	1429	4330
Australia	1219	2390
France	843	1960
Georgia	745	37 250
Finland	681	4540
Sweden	673	1819
Norway	584	4867
Korea	513	1350
Israel	477	5963
Austria	452	4109
Ireland	329	3290
Cyprus	317	6340
Belgium	281	1653
Portugal	269	2445
Singapore	262	2911
Turkey	247	1764
Denmark	229	1527
India	221	713
Pakistan	172	1911
Thailand	128	3200
Chile	124	1771
Greece	116	1450
Colombia	90	1125
Lithuania	90	3000
Brazil	88	419
Indonesia	87	414
Malaysia	77	856
Slovenia	70	1750
Hong Kong	67	957
South Africa	44	550
Saudi Arabia	41	1367
Jordan	40	571
Guinea	33	3300
Luxembourg	25	1250

display the different researchers and the connection lines characterise the co-authorship. The map shows that most of the scientific collaborations in the SMEs' ambidexterity area originate from the US. In addition, the strongest scientific networks seen in Figure 6 highlight strong networks between US-Europe, US-China, Europe-China, Europe-Japan, and Australia-Europe.

The map also exposes the niche of ambidexterity area on the African continent as little to no collaborations are displayed. This suggests that most African countries need to engage in local and international collaborations to be aware of key research areas globally. It is also possible that most African countries engage in local collaborations which often lack international perspective on key areas such as ambidexterity.

Literature network and keyword analysis

The keyword analysis was conducted to show the course of literature and the major developments of literature based on ambidexterity and SMEs' business performance. Figure 7 displays the network keyword visualisation generated through conducting a co-occurrence and the total strength of authors' keywords. Vosviewer software was utilised to assess the co-occurrence of authors' keywords. In Figure 7, the size of every node on the network connection stands for the occurrence and strength of the keywords. The smaller circles stand for the weaker strength of the authors' keywords while bigger circles represent compelling strength and links of the author's keywords. The same colour of circles stands for the cluster of the keywords, and the lines between the circles show the link and strength between the keywords (Pellegrini et al., 2022; Ragazou et al., 2022; Sabando-Vera et al., 2022). Selection of default settings was utilised leading to co-occurrence analysis and total strength relationships. A further parameter implemented was to clean the keywords by removing synonyms, general words, and other irrelevant words. Therefore, a total number of 101 keywords were selected and divided into five clusters shown in different colours.

The red cluster shows organisational ambidexterity and its relationship with dynamic capabilities, knowledge management, product development, enterprise resource planning, information systems, performance, and competitive advantage. The links highlight the significance of managing dynamic capabilities, knowledge, product development, enterprise resource planning, and information systems in achieving SMEs' performance and competitive advantage. The green cluster signifies the strong link between ambidexterity and management of exploration, exploitation, contextual ambidexterity, knowledge, and organisational ambidexterity. The cluster on ambidexterity therefore shows the significance of knowledge management in achieving various forms of ambidexterity leading to the ability of SMEs to show, conform, and use the knowledge that comes through ambidexterity. In short, ambidexterity and organisational ambidexterity facilitate learning and knowledge acquisition on how to participate competitively in SMEs. The fourth, the blue cluster shows the innovation presence in SMEs' strategies which is significant for sustainable development, product development, ideal organisational framework, and transformational leadership. In addition, the yellow cluster represents the concept of innovation ambidexterity, open innovation, and their relationship to SMEs' entrepreneurial orientation strategies to increase competitive advantage, innovative performance, and absorptive capacity in their operations (see Figure 7 and Appendix 1, Figure 1–A1). Moreover, the purple cluster shows how exploitation and exploration relate to natural resource exploration and achieving sustainability.

The different clusters show that ambidexterity, continuous innovation, knowledge management, and enterprise resource management (ERM) can be idyllic to be implemented by

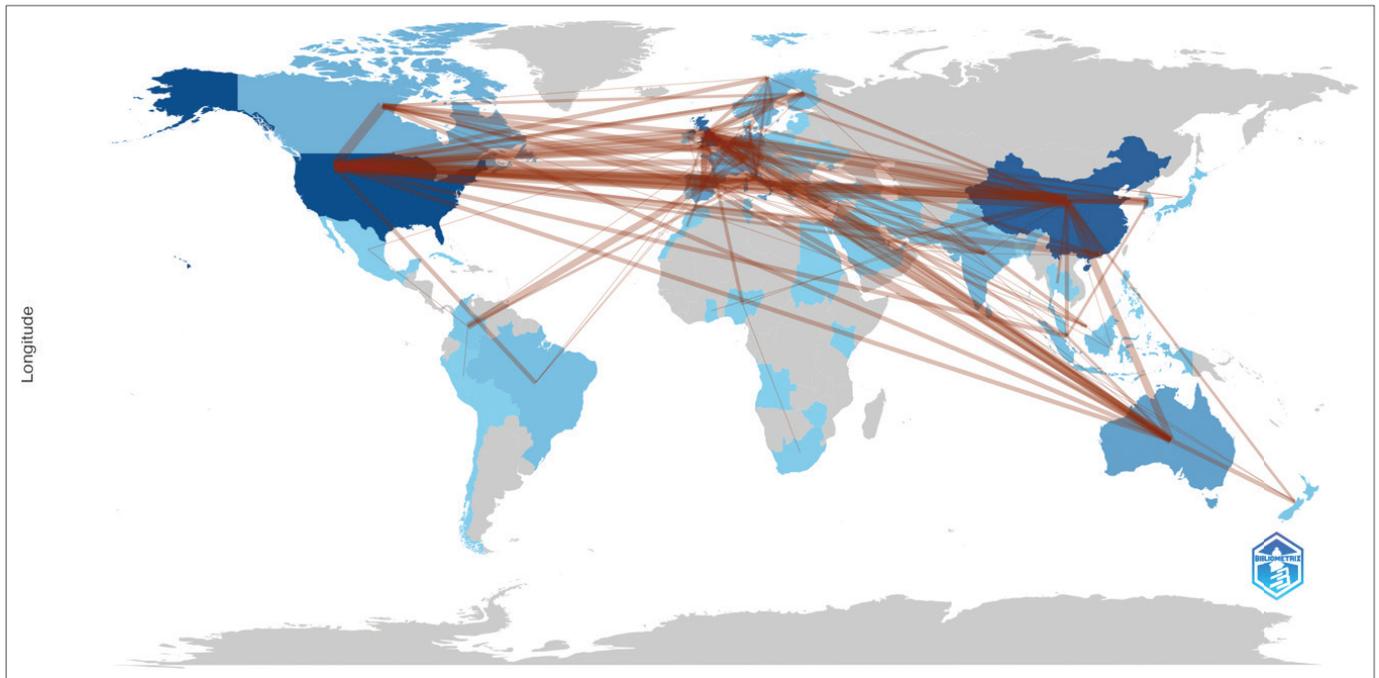


FIGURE 6: Mapping scientific collaboration.

SMEs and assist them in adjusting to the demands of the dynamic market. The thematic and keyword analysis suggest a new business model which can provide prompt identification of a new direction for SMEs to respond swiftly in establishing processes and models that lead to adaptability and consumer satisfaction. It can be concluded from the right and the centre that the thematic and authors' keywords analysis displays clarity in the new business model currently emerging, based on digital ambidexterity, dynamic capabilities, knowledge management, firm performance, ERM, and open innovation, which can contribute to SMEs' competitive advantage execution and sustainability in an unstable business environment.

The themes of innovation performance, digital transformation, dynamic capability, knowledge sharing, and sustainability represent the new business themes gaining competitive advantage through ambidexterity. The themes of innovation ambidexterity, digital transformation, dynamic capabilities, and knowledge management have emerged as crucial viewpoints to SMEs' business performance. Figure 8 shows the thematic structure and development of ambidexterity literature based on the authors' keywords. The conceptual structure (see Figure 7) shows ideas generated from published articles included in the bibliometric analysis.

The graph shows the research ideas of the research, while the size represents the proportion to the overall keywords. The motor theme on the quadrant in the upper-right side in Figure 8 shows high concentration and centrality, while the basic themes are on the bottom-right side of the quadrant representing high centrality but low concentration. The upper-right side of the quadrant

displays the niche themes generated from the published articles, whereas the bottom-left side of the quadrant shows emerging themes, characterised by low centrality and density (Bråthen et al., 2021; Pellegrini et al., 2022; Sabando-Vera et al., 2022). Digital transformation, dynamic capabilities, knowledge sharing, innovation ambidexterity, and performance dominated the niche themes of the thematic analysis. In a dynamic business environment, SMEs should improve their competitive advantage. Through incorporating digitisation, ambidexterity, knowledge management, and ERM, SMEs can enhance their performance and adapt to constantly changing business environment.

Thematic map and literature evolution

Figure 9 shows the thematic evolution of literature ideas over different time frames confirming that SMEs need to transform their business model. The different nodules represent different subject areas, as shown by the keyword common in the literature. These nodules represent changing ideas in literature over time. Therefore, Figure 9 shows the significant changes in literature over the two decades under investigation. The graph shows that literature ties and connections have increased substantially between 1999 and 2022. The graph further shows that topics have gradually changed even though others continue to maintain their prominence. For instance, different themes emerged between 1999 and 2018. The thematic map shows that though ambidexterity was the main theme between 1999 and 2015, in the period between 2016 and 2018 other themes included supply chain, radical innovation, ICT, and new study. Different ideas are included in the research on the need for a new SMEs business model on innovation ambidexterity, digital transformation, dynamic capabilities, and knowledge management. In addition, the research

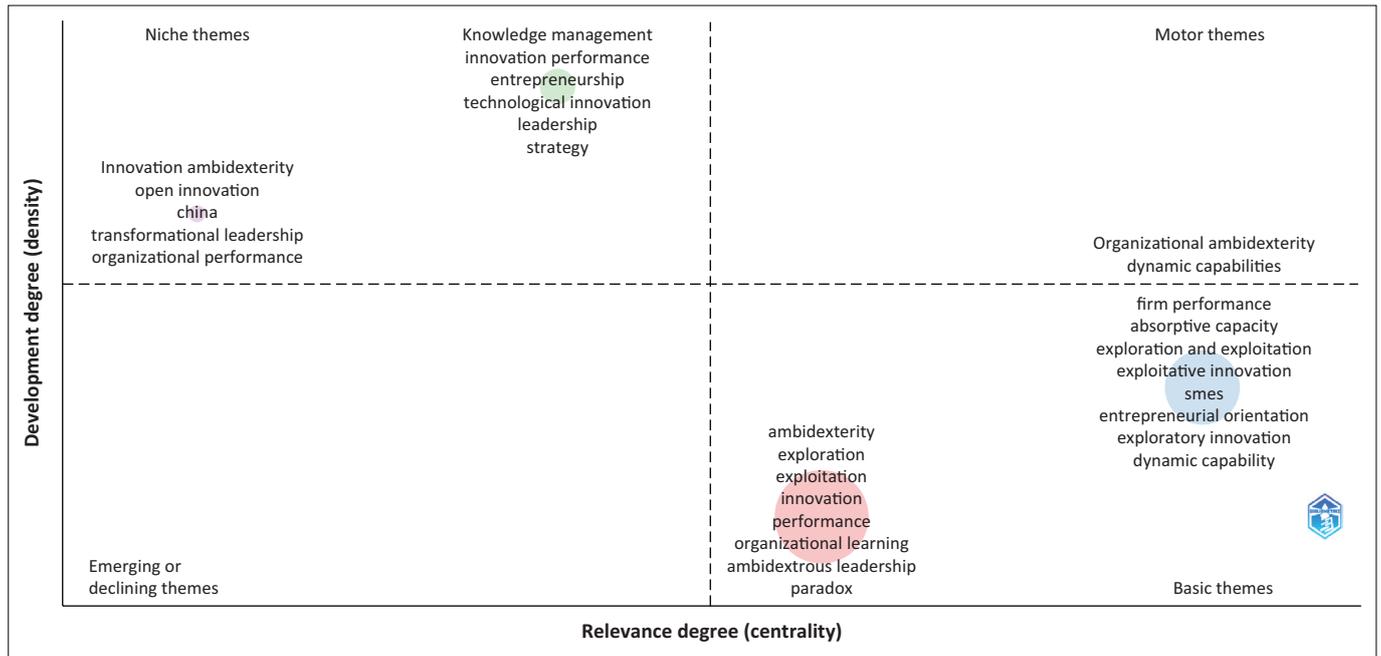


FIGURE 8: Conceptual structure and literature development in ambidexterity.

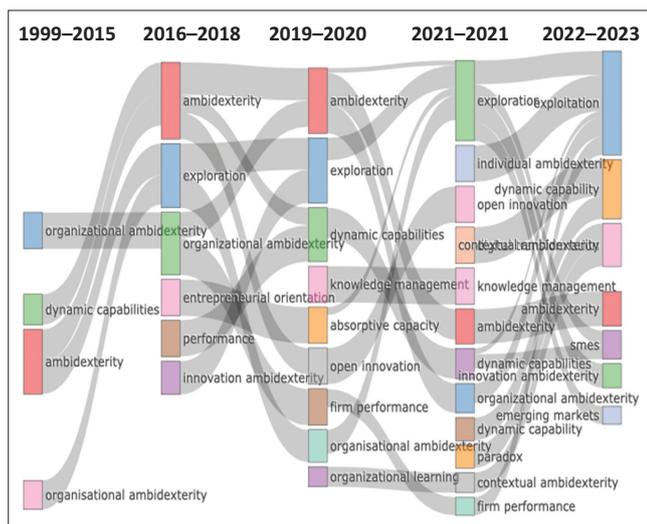


FIGURE 9: Thematic evolution map.

increasing number of organisational paradoxes, uncertainty, and strategic choices they face.

These reflections suggest that organisations must adopt a flexible and adaptive approach to thrive in today's rapidly changing business landscape. This includes developing the ability to balance exploration and exploitation, as well as effectively navigating the complexities of digital transformation. By embracing ambidexterity, open collaborations and actively managing their knowledge assets, organisations can position themselves for long-term success in the evolving digital ecosystem. In conclusion, the findings of the evolution map suggest the necessity of a business model development in emerging markets that will be based on digital ambidexterity, innovation, knowledge management, ERM, dynamic capabilities (network capabilities), entrepreneurial & market orientation as well as open

innovation (value co-creation). Figure 8 demonstrates the synthesised structure of the business model derived from the literature.

Discussion of literature analysis

Based on the thematic analysis and map evolution through bibliometrics, an SMEs dynamic innovation model (see Figure 10) is created. This model highlights the importance of continuous learning and adaptation in the face of technological advancements and market disruptions. It provides a framework for SMEs to effectively manage their innovation processes, fostering agility and resilience in the rapidly changing business environment. The themes from Figure 8 highlight key areas for SMEs to focus on (ambidexterity, innovation, knowledge management, ERM, dynamic capabilities [network capabilities], entrepreneurialism, and market orientation). Based on these themes, SMEs can develop strategies and implement practices that enable them to navigate the challenges and opportunities presented by technological advancements and market disruptions. By embracing ambidexterity, SMEs can balance their exploration of new technologies and markets with the exploitation of existing resources and capabilities. Innovation and knowledge management are crucial for SMEs to continuously improve their products, services, and processes in response to changing customer needs and market demands. Enterprise resource management helps SMEs optimise their resources and operations to remain competitive in a rapidly evolving business environment. Therefore, based on the above-mentioned themes, a dynamic innovation management model (DIM) is proposed.

Based on the model presented in Figure 10, SMEs should adopt correct measures and search for digital innovations to ensure that the business is in constant alignment with the

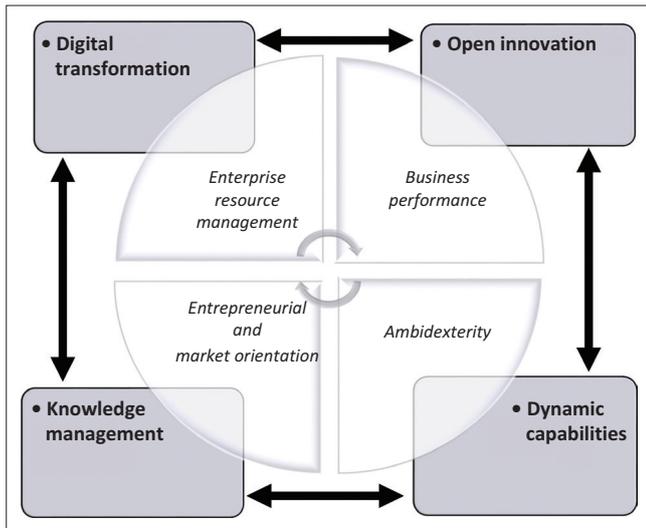


FIGURE 10: Dynamic innovation management model.

environment. Business changes in recent years have proven the power of digital technologies, knowledge management and collaboration with other stakeholders beneficial for achieving enhanced performance. Such changes ensure the development of flexible and compatible business models that assist businesses in adjusting to the changing conditions.

Based on the analysis of published articles through bibliometric analysis, various themes were discovered. The results revealed that digital transformation, ambidexterity, knowledge management, open innovation, and collaborations are ideal approaches for SMEs to address the changing business environment. While various academics identify ambidexterity and innovation to be significant for SMEs achieving sustainability, the bibliometric analysis highlights emerging markets research lags on ambidexterity, digital transformation, open innovation, and knowledge management to mitigate the negative effects of the changing business environment. The analysis stresses the key role of the above concepts in the extension and adoption of the SMEs' Dynamic Innovation model.

Figure 9 highlights that ambidexterity, digitisation, knowledge management, and ERM are important conditions for SMEs faced with new challenges and pressures. In addition, the above precedence brings ideal survival efforts for resource-constrained SMEs to integrate the principles of ambidexterity, digitisation, knowledge management, and ERM into all procedures throughout the various hierarchical levels of the business. The existence of digitisation and innovation emerged as the answer for SMEs to engage in networking relationships and co-creation to curb the negative effects of being small and resource constraints. Digital innovation combined with, ambidexterity, enabling co-creation to facilitate ERM and exploiting network capabilities actions with the right grounding develop the conditions to steer SMEs towards an adaptable and renewed direction.

Conclusion

The article examined ambidexterity literature in SMEs and the impact that it has on performance. The systematic literature review and empirical analysis were used to understand the path of previous studies and the direction of the research. This article also provides insight into the research gap in ambidexterity and firm performance studies in SMEs. The discussion revealed that digital ambidexterity literature is scarce and most academics studying the areas of ambidexterity have mainly focused on issues such as innovation, information and communication technology (ICT), and other related concepts. In addition, further analysis of the literature through bibliometric analysis led to the revelation that emerging markets lag in ambidexterity research. The analysis also revealed that knowledge management is critical in ambidexterity literature. The article also highlighted that ambidexterity exists to be a niche market for emerging market research. This confirms the resolutions made by the researcher that the body of literature on ambidexterity in Africa still lags behind the rest of the world.

The analysis of ambidexterity literature highlights the fact that the dynamic market environmental factors impose radical decisions for SMEs to create survival opportunities and improve the business status quo. Dynamic competitive circumstances compel each competitor to attempt impractical ideas to survive. The competitive circumstances continue to change because of customers' varying needs and expectations, changes in technology, and the global marketplaces. The preceding decades show that competition among SMEs has strengthened radically. For SMEs to compete sustainably, it is significant to adapt to shifting market trends, technological changes, and emergent new management and organisational procedures. Small and medium enterprise endurance gradually determines different factors and their flexibility to refocus their strategies and technologies.

This is the reason for the DIM (see Figure 10). The proposed dynamic innovation management model centres on SMEs' ability to make radical decisions in uncertain environments. The model theorises four cornerstones including digital transformation, open innovation, dynamic capabilities, and knowledge management as the ultimate answer to unmatched SMEs business performance in an uncertain environment. In the past decade, SMEs have been exposed to the negative effects of both global financial crises and the pandemic. It is no secret that SMEs suffer endlessly from inadequate resource allocation and excessive regulation. Furthermore, policies and regulations that preside over the formation of SMEs are extraordinarily complex and differing. Researchers reason that SMEs lack compliance with regulations as they are considered arduous and costly. Nevertheless, SMEs lack an understanding of the regulations that oversee them, leading to compliance issues.

As a result, SMEs continue to lose confidence as the country's stringent labour laws are unfavourable to business growth (Mansuy et al., 2019).

The effects of constantly changing business environmental issues highlight the many weaknesses of SMEs. Even though several researchers have considered SMEs bricolage as a means to survival (Fu et al., 2019), they continue to encounter problems in their operation. These social circumstances and the country's cultural facets generate an environmental benevolence that aids SMEs or exhibits challenges that suffocate SMEs. Governmental support has proved to be inadequate to ensure the survival and competitiveness of SMEs. Significant actions from the firms themselves, new perspectives, and attitudes, and, most importantly, procedures to safeguard their future are required. Small and medium enterprises require a new business model. The business model suggested DIM not only ensures the adaptability of the business but enables it to generate value in a new business environment.

Thus, SMEs should establish knowledge, manage enterprise resources, and understand the customers and markets to enable the exploitation and exploration of innovative opportunities that can facilitate enhanced business performance. The connection of the parts of the DIM with the thoughts of change management theory, ideas of Feldheim (2003), and the organisation theory views of Mary Parker Follett establishes key insight of the analysis and advocates new direction for future research. The illustrated insight shares the need for businesses to adapt, learn, and transform in alignment with the business environment. For that reason, the development of the DIM aligns businesses to the changing business environment with special significance to SMEs to become accustomed to uncertain business environments and increasing risks.

Acknowledgements

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

D.T.C., W.C. and E.C.R. contributed equally to the article.

Ethical considerations

Ethical clearance to conduct this study was obtained from the University of Fort Hare (No. REC-270710-028-RA).

Funding information

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability

Data are not available as per participant request.

Disclaimer

The views and opinions expressed in this article are those of the authors and are the product of professional research. It does not necessarily reflect the official policy or position of any affiliated institution, funder, agency, or that of the publisher. The authors are responsible for this article's results, findings, and content.

References

- Adomako, S., & Ahsan, M. (2022). Entrepreneurial passion and SMEs' performance: Moderating effects of financial resource availability and resource flexibility. *Journal of Business Research*, 144, 122–135. <https://doi.org/10.1016/j.jbusres.2022.02.002>
- Alcalde-Heras, H., Iturriz-Landart, C., & Aragon-Amonarriz, C. (2019). SME ambidexterity during economic recessions: the role of managerial external capabilities. *Management Decision*, 57(1), 21–40. <https://doi.org/10.1108/MD-03-2016-0170>
- Amjad, A., & Nor, K.M. (2020). A bibliometric analysis of two decades of global research on organizational ambidexterity using the Scopus database. *Article International Journal of Engineering and Advanced Technology*, 9(4), 2249–8958. <https://doi.org/10.35940/ijeat.D6728.049420>
- Andrade, J., Franco, M., & Mendes, L. (2021). Technological capacity and organisational ambidexterity: The moderating role of environmental dynamism on Portuguese technological SMEs. *Review of Managerial Science*, 15(7), 2111–2136. <https://doi.org/10.1007/s11846-020-00416-x>
- Ardito, L., Raby, S., Albino, V., & Bertoldi, B. (2021). The duality of digital and environmental orientations in the context of SMEs: Implications for innovation performance. *Journal of Business Research*, 123, 44–56. <https://doi.org/10.1016/j.jbusres.2020.09.022>
- Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative science studies*, 1(1), 377–386. https://doi.org/10.1162/qss_a_00019
- Boronat-Navarro, M., Escribá-Esteve, A., & Navarro-Campos, J. (2021). Ambidexterity in micro and small firms: Can competitive intelligence compensate for size constraints?. *BRQ Business Research Quarterly*, 0(0), 1–16. <https://doi.org/10.1177/23409444211054861>
- Bråthen, M., Doan, E., & Breunig, K.J. (2021). Ambidexterity to overcome digital transformation challenges: A bibliometric review. *Event Proceedings: LUT Scientific and Expertise Publications* (pp. 1–15). <https://hdl.handle.net/11250/2990035>.
- Ceptureanu, S.I., & Ceptureanu, E.G. (2021). Innovation ambidexterity effects on product innovation performance: The mediating role of decentralization. *Kybernetes*, 52(5), 1698–1719. <https://doi.org/10.1108/K-05-2021-0364>
- Chakma, R., & Dhir, S. (2023). Exploring the determinants of ambidexterity in the context of Small and Medium Enterprises (SMEs): A meta-analytical review. *Journal of Management & Organization*, 2023, 1–29. <https://doi.org/10.1017/jmo.2023.17>
- Chams-Anturi, O., Moreno-Luzon, M.D., & Escorcía-Caballero, J.P. (2020). Linking organizational trust and performance through ambidexterity. *Personnel Review*, 49(4), 956–973. <https://doi.org/10.1108/pr-07-2018-0239>
- Cheah, S.C., & Tan, C.L. (2023). External knowledge sourcing, organizational ambidexterity and manufacturing performance: A new insight for dynamic operation management. *Benchmarking*. <https://doi.org/10.1108/BJ-11-2022-0695>
- Churruga, K., Pomare, C., Ellis, L.A., Long, J.C., & Braithwaite, J. (2019). The influence of complexity: A bibliometric analysis of complexity science in healthcare. *BMJ Open*, 9(3), e027308. <https://doi.org/10.1136/bmjopen-2018-027308>
- Di Muro, P., Lecoivre, L., & Turner, R. (2021). Ambidextrous strategy and execution in entrepreneurial project-oriented organizations: The case of Pagani supercars. *International Journal of Project Management*, 39(1), 45–58. <https://doi.org/10.1016/j.ijproman.2020.09.006>
- Donbesuur, F., Ampong, G.O.A., Owusu-Yirenkyi, D., & Chu, I. (2020). Technological innovation, organizational innovation and international performance of SMEs: The moderating role of the domestic institutional environment. *Technological Forecasting and Social Change*, 161, 120252. <https://doi.org/10.1016/j.techfore.2020.120252>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W.M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Escorcía-Caballero, J. P., Chams-Anturi, O., & Moreno-Luzon, M. D. (2022). The effect of ambidexterity on market performance: a new perspective and measurement from the dynamic capability framework. *Technology Analysis and Strategic Management*, 1–12. <https://doi.org/10.1080/09537325.2022.2100986>
- Feldheim, M.A. (2003). Mary Parker Follett lost and found-again, and again, and again. *International Journal of Organization Theory & Behavior*, 7(3), 341–362. <https://doi.org/10.1108/IJOTB-07-03-2004-B003>

- Ferraris, A., Giachino, C., Ciampi, F., & Couturier, J. (2021). R&D internationalization in medium-sized firms: The moderating role of knowledge management in enhancing innovation performances. *Journal of Business Research*, 128, 711–718. <https://doi.org/10.1016/j.jbusres.2019.11.003>
- Frank, H., Güttel, W., & Kessler, A. (2017). Environmental dynamism, hostility, and dynamic capabilities in medium-sized enterprises. *International Journal of Entrepreneurship and Innovation*, 18(3), 185–194. <https://doi.org/10.1177/1465750317723219>
- Fu, H., Chen, W., Huang, X., Li, M., & Köseoglu, M.A. (2019). Entrepreneurial bricolage, ambidexterity structure, and new venture growth: Evidence from the hospitality and tourism sector. *International Journal of Hospitality Management*, 85, 102355. <https://doi.org/10.1016/j.ijhm.2019.102355>
- García-Pérez-de-Lema, D., Ruiz-Palomo, D., & Diéguez-Soto, J. (2021). Analysing the roles of CEO's financial literacy and financial constraints on Spanish SMEs technological innovation. *Technology in Society*, 64, 101519. <https://doi.org/10.1016/j.TECHSOC.2020.101519>
- Gil-Marques, M., & Moreno-Luzon, M.D. (2020). Building sustainable contextual ambidexterity through routines: A case study from information technology firms. *Sustainability (Switzerland)*, 12(24), 1–19. <https://doi.org/10.3390/su122410638>
- Gregurec, I., Furjan, M.T., & Tomičić-pupek, K. (2021). The impact of COVID-19 on sustainable business models in SMEs. *Sustainability*, 13(3), 1098. <https://doi.org/10.3390/SU13031098>
- Hernaus, T., Sitar, A. S., & Maric, M. (2023). From Strategic Ambidexterity to Employees' Task Performance? The Intermediary Role of Job Design. In *Academy of Management Proceedings*, (Vol. 2023, No. 1, p. 18370). <https://doi.org/10.5465/AMPROC.2023.2748P>
- Im, G., Rai, A., & Lambert, L. S. (2019). Governance and Resource-Sharing Ambidexterity for Generating Relationship Benefits in Supply Chain Collaborations*. *Decision Sciences*, 50(4), 656–693. <https://doi.org/10.1111/deci.12353>
- Jacobs, M., & Maritz, R. (2020). Dynamic strategy: Investigating the ambidexterity-performance relationship. *South African Journal of Business Management*, 51(1), a1643. <https://doi.org/10.4102/SAJBM.V51I1.1643>
- Jakhar, S.K., Bhattacharya, A., Rathore, H., & Mangla, S.K. (2020). Stakeholder pressure for sustainability: Can 'innovative capabilities' explain the idiosyncratic response in the manufacturing firms?. *Business Strategy and the Environment*, 29(6), 2635–2653. <https://doi.org/10.1002/bse.2526>
- Kassotaki, O., Paroutis, S., & Morrell, K. (2019). Ambidexterity penetration across multiple organizational levels in an aerospace and defense organization. *Long Range Planning*, 52(3), 366–385. <https://doi.org/10.1016/j.lrp.2018.06.002>
- Katou, A.A., Kafetzopoulos, D., & Vayona, A. (2023). Investigating the serially mediating mechanisms of organizational ambidexterity and the circular economy in the relationship between ambidextrous leadership and sustainability performance. *Sustainability (Switzerland)*, 15(10), 7937. <https://doi.org/10.3390/su15107937>
- Keyhani, M., Deutsch, Y., Madhok, A., & Lévesque, M. (2022). Exploration-exploitation and acquisition likelihood in new ventures. *Small Business Economics*, 58(3), 1475–1496. <https://doi.org/10.1007/s11187-021-00452-1>
- Mankgele, K. (2023). The effect of organizational ambidexterity on the sustainable performance of SMEs in the Limpopo province of South Africa. *International Journal of Research in Business and Social Science (2147-4478)*, 12(2), 65–72. <https://doi.org/10.20525/ijrbs.v12i2.2322>
- Mansuy, N., Miller, C., Parisien, M.A., Parks, S.A., Batllori, E., & Moritz, M.A. (2019). Contrasting human influences and macro-environmental factors on fire activity inside and outside protected areas of North America. *Environmental Research Letters*, 14(6), 064007. <https://doi.org/10.1088/1748-9326/ab1bc5>
- McCullough, R. (2022). *Scopus roadmap: What's new in 2022?*. *Scopus Roadmap: What's New in 2022?*. Elsevier Scopus Blog. Retrieved from <https://blog.scopus.com/posts/scopus-roadmap-whats-new-in-2022>
- Mehrabi, H., Coviello, N., & Ranaweera, C. (2019). Ambidextrous marketing capabilities and performance: How and when entrepreneurial orientation makes a difference. *Industrial Marketing Management*, 77, 129–142. <https://doi.org/10.1016/j.indmarman.2018.11.014>
- Naughton, S., Golgeci, I., & Arslan, A. (2020). Supply chain agility as an acclimatisation process to environmental uncertainty and organisational vulnerabilities: Insights from British SMEs. *Production Planning and Control*, 31(14), 1164–1177. <https://doi.org/10.1080/09537287.2019.1701130>
- Nielsen, S.L., Christensen, P.R., & Storvang, P. (2021). Does design thinking benefit ambidextrous dynamics between SME managers' entrepreneurial and administrative mindsets? *Design Journal*, 24(5), 1–21. <https://doi.org/10.1080/14606925.2021.1959121>
- Ortiz de Guinea, A., Raymond, L., de Guinea, A. O., & Raymond, L. (2020). Enabling innovation in the face of uncertainty through IT ambidexterity: A fuzzy set qualitative comparative analysis of industrial service SMEs. *International Journal of Information Management*, 50, 244–260. <https://doi.org/10.1016/j.ijinfomgt.2019.05.007>
- Page, S.B., Bryson, J.M., Crosby, B.C., Seo, D., & Stone, M.M. (2021). Ambidexterity in cross-sector collaborations involving public organizations. *Public Performance and Management Review*, 44(6), 1161–1190. <https://doi.org/10.1080/15309576.2021.1937243>
- Partanen, J., Kohtamäki, M., Patel, P.C., & Parida, V. (2019). Supply chain ambidexterity and manufacturing SME performance: The moderating roles of network capability and strategic information flow. *International Journal of Production Economics*, 221, 107470. <https://doi.org/10.1016/j.ijpe.2019.08.005>
- Paschen, J., Paschen, U., Pala, E., & Kietzmann, J. (2020). Artificial intelligence (AI) and value co-creation in B2B sales: Activities, actors and resources. *Australasian Marketing Journal*, 29(3), 243–251. <https://doi.org/10.1016/j.ausmj.2020.06.004>
- Pellegrini, M.M., Manesh, M.F., Ragazou, K., Passas, I., & Sklavos, G. (2022). Investigating the strategic role of digital transformation path of SMEs in the era of COVID-19: A bibliometric analysis using R. *Sustainability*, 14(18), 11295. <https://doi.org/10.3390/SU141811295>
- Posch, A., & Garaus, C. (2019). Boon or curse? A contingent view on the relationship between strategic planning and organizational ambidexterity. *Long Range Planning*, 53, 101878. <https://doi.org/10.1016/j.lrp.2019.03.004>
- Priyono, A., Idris, F., & Lim, S.B.A.H. (2020). Achieving ambidexterity in internationalization: Analysis of how SMEs cope with tensions between organizational agility–efficiency. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 1–19. <https://doi.org/10.3390/joitmc6040188>
- Ragazou, K., Passas, I., Garefalakis, A., & Dimou, I. (2022). Investigating the research trends on strategic ambidexterity, agility, and open innovation in SMEs: Perceptions from bibliometric analysis. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 118. <https://doi.org/10.3390/joitmc8030118>
- Raisig, L.M. (1962). Statistical bibliography in the health sciences. *Bulletin of the Medical Library Association*, 50(3), 450.
- Richter, F. (2021). *These are the top 10 manufacturing countries in the world*. World Economic Forum. Statista. Retrieved from <https://www.weforum.org/agenda/2020/02/countries-manufacturing-trade-exports-economics/>
- Rustenborg, S.W. (2017). *Small but versatile: How SMEs perform ambidextrous behaviour*. Central University of Technology.
- Sabando-Vera, D., Yonfa-Medrandá, M., Montalván-Burbano, N., Albors-Garrigós, J., & Parrales-Guerrero, K. (2022). Worldwide research on open innovation in SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(1), 20. <https://doi.org/10.3390/joitmc8010020>
- Salas Vallina, A., Moreno-Luzon, M. D., & Ferrer-Franco, A. (2019). The individual side of ambidexterity: Do inspirational leaders and organizational learning resolve the exploitation-exploration dilemma? *Employee Relations*, 41(3), 592–613. <https://doi.org/10.1108/ER-02-2018-0050>
- Solis-Molina, M., Hernández-Espallardo, M., & Rodríguez-Orejuela, A. (2018). Performance implications of organizational ambidexterity versus specialization in exploitation or exploration: The role of absorptive capacity. *Journal of Business Research*, 91, 181–194. <https://doi.org/10.1016/j.jbusres.2018.06.001>
- Trieu, H.D., Nguyen, P.V., Tien Tran, K., Chi Minh City, -Ho, Chi Minh, H., Demetris Vrontis, V., & Ahmed, Z. (2023). *Organisational resilience, ambidexterity and performance: The roles of information technology competencies, digital transformation policies and paradoxical leadership*. Retrieved from Emerald.Com.
- Turner, N., Kutsch, E., & Leybourne, S.A. (2016). Rethinking project reliability using the ambidexterity and mindfulness perspectives. *International Journal of Managing Projects in Business*, 9(4), 845–864. <https://doi.org/10.1108/IJMPB-08-2015-0074>
- Turner, N., & Lee-Kelley, L. (2013). Unpacking the theory on ambidexterity: An illustrative case on the managerial architectures, mechanisms and dynamics. *Management Learning*, 44(2), 179–196. <https://doi.org/10.1177/1350507612444074>
- Turner, N., Maylor, H., & Swart, J. (2013). Ambidexterity in managing business projects – An intellectual capital perspective. *International Journal of Managing Projects in Business*, 6(2), 379–389. <https://doi.org/10.1108/17538371311319089>
- Turner, N., Swart, J., Maylor, H., & Antonopoulos, E. (2016). Making it happen: How managerial actions enable project-based ambidexterity. *Management Learning*, 47(2), 199–222. <https://doi.org/10.1177/1350507615610028>
- Van Eck, N., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- Yunita, T. (2023). Investigate Strategic Ambidexterity: How Environmental Dynamism Affects Networking Capability in Small Businesses. *International Journal of Science, Technology & Management*, 4(1). <https://doi.org/10.46729/ijstm.v4i1.699>

