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Abstract: Efficiency and productivity are key factors for organisations that promote greater competitive advantages. In this article the different tools, techniques and methods to increase them were analysed. A rational, qualitative and descriptive meta-analysis was carried out through an exhaustive review of scientific articles from the Scopus database, in a time horizon of 2015 to 2020, with which 526 articles were found, after reviewing the A summary of each of them and reading their content in depth were filtered to 33 articles, subsequently, a final selection of 25 articles was made, the results of which respond directly to the research questions formulated, with the selection criteria: ten most cited articles, ten most recent publications and five most cited reviews. The results obtained showed that the use of information technologies in operations and in the management system of a company positively influence the increase in efficiency and productivity and added value against the competition, as well as the implementation of the tools that allow the development of environmental and organisational sustainability.

Keywords: efficiency; productivity; competitiveness; productivity tools; sustainability.

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1 Introduction

Through the history of the organisational development, it has been used tools for the productivity of the international and national companies, which at the same time, it does have a specific behaviour related to the surveillance and durability (Jie, 2021) on the market, where the new conditions of the globalisation demand the organisations to establish strategies and mechanisms who can guarantee the efficiency, the productivity, and the competitiveness on the markets (Bag and Ray, 2023; Skrynkovskyy et al., 2021; Morelos et al., 2018).

This study has as the principal target, make a systematic revision of the scientific literature related with the concepts of efficiency, productivity, and competitiveness in the organisations, studying the existing theoretical fundamentals about the different applied tools for the increase of efficiency, and competitiveness in the organisations. Establishing the criteria of inclusion, exclusion and analysis of the empirical investigations of international character, about the applied tools to increase the productivity in the organisations. Also, in last place, identifying the existing relation between the application of tools, techniques, and methods for the growth of the efficiency, productivity and competitiveness in the organisations.

In the development of the present article, it included some answers to problem questions of investigations like: which tools or models are permitted to value efficiency in organisations? Which are the tools that contribute in the use of the growth of organisational productivity?; how the tools are the best for the productivity and efficiency of the increase of the competitiveness of companies? Trying to find strategic acknowledgments to the organisations about related themes.

For this systematic literature review, a qualitative and descriptive rational methodology is presented, considering as the main source of information different scientific articles related to the concepts of efficiency, productivity and organisational competitiveness, as well as the different tools, techniques and methods associated with the subject matter. An exhaustive analysis of scientific articles in English language was carried out, considering the Scopus database, with a time horizon referring to the last five years (2015–2020). All of the above was developed in a ten-step plan classified into three categories: first, the planning and definition of criteria for the review, second, the characterisation and analysis of the theoretical foundations, and third, the report of results and recommendations.

The structure of this article starts with an introduction regarding the relevance and objective of the research. Next, the theoretical framework is developed on the topics of efficiency, productivity and organisational competitiveness, as well as the relationship between these and the tools that enhance these factors within companies. After this, the methodology used to carry out this article is described in detail in ten steps, in order to give continuity to the results obtained. Finally, the discussion and conclusion of the systematic review study are presented.

2 Reference framework

2.1 *Efficiency, productivity and competitiveness*

The efficiency for Cavalleri Ferrari and Braga (2021), are related with the administration of the resources and it has a high incidence on the growth of productivity. Therefore, having problems with the management of standards or policies, poor use of equipment and tools, not exercising process control and having time and material waste, among others, represent some of the main problems that some companies, especially small and medium-sized enterprises (SMEs) (Morelos et al., 2021; Agarwala et al., 2022) have to face in terms of productivity (Xie et al., 2021). Therefore, it is necessary to establish indicators that serve to measure productivity in companies and, in turn, profitability (Nguyen et al., 2023).

Likewise, productivity is defined by Céspedes et al. (2016), as that important factor in organisations that determines the growth and permanence of it in the long-term, it is also seen as the value of the product per unit of input (Tolentino and Ferreira, 2023; Loayza, 2016) since if there is the same amount of inputs, but a higher productivity using a percentage of these, it will generate a greater amount of products. As mentioned by López (2016) in his article, this can be defined in mathematical terms, as the relationship between the outputs and inputs of a process, productivity $(P) = \text{outputs (S)} / \text{inputs (E)}$. From the above formula, Bierman et al. (2016), states in their research article, that if production increases, productivity will also increase and, if the number of inputs decreases or remains at a constant level and production remains, it shows that there is productivity (Gkypali et al., 2021; Dvouletý and Blažková, 2022; Panigrahi et al., 2022).

Productivity has four main components that characterise it. First, we find innovation, which allows the invention of new processes, products or efficient technologies. The second component is education, which allows the generation of new knowledge, strategies and skills. As a third component, we find efficiency, which allows the distribution, reasonable and effective use of the different inputs and resources. Finally, we have infrastructure that supports the economy by providing services and goods within it (Barilla et al., 2020; Ibufes and Benavides, 2018).

However, competitiveness is understood as the capacity of an organisation to manufacture a product and provide a superior service compared to direct competitors in the market (Stavroulakis et al., 2021). The National Planning Department (DNP) defines competitiveness as the ability to successfully produce goods and services in a competitive and globalised market, providing growth and income improvement (DNP, 2014).

On the other hand, Porter (1998), considered one of the most outstanding authors on competitiveness issues for his work 'The competitive advantage of nations', where he expounds the theory on the competitive advantage and interaction between nations and

their economic prosperity. Porter, using Adam Smith's theories as a basis, presents the concept of 'cluster' as a competitive tool and states that it is not enough for an organisation to have resources and specialties to develop a competitive advantage, so it is necessary to have productive clusters, materials, technology and information, making use of vertical integration to become competitive (Kholiavko et al., 2020).

In relation to the terms of productivity and efficiency, there has always been a strong relationship, even when they are used in an organisational environment. For Masaquiza et al. (2017), in their review article concludes that there is an increase in the level of productivity thanks to the application of good sustainable practices in the production system, this result alludes to the good planning and efficient use of the resources available for the production process. Likewise, Guzmán-Soria et al. (2020), in their empirical study on the relationship between efficiency and productivity in MSMEs in Mexico, affirms that an increase in the level of productivity of organisations has a direct impact on their efficiency in a positive way, with both concepts having a proportional relationship (Sjaaf et al., 2020).

2.2 Efficiency, productivity and competitiveness tools

Being efficient in the optimisation of resources, producing more output with less input, or reducing the use of inputs and having a good distribution of them, drives the increase in productivity levels. The following are the tools used to facilitate increased productivity in organisations:

2.2.1 Tecnologías de información y la comunicación (TICs)

The neoclassical microeconomic principles to the macroeconomic vision, were applied taking into account the technology as a function of production, which was demonstrated with the econometric model of Solow, that an investment in information and communication technologies, allow a multifactor growth of productivity thanks to the efficient use for workers, but not only at the organisational level, but macroeconomic (Villacís and Pazmiño, 2018; Díaz, 2017). Other studies conducted in Latin America, regarding the application of the Solow model for textile industries concluded that in particular the technology variable has an influence on the growth or decline of productivity (Kufenko et al., 2020).

2.2.2 Industry 4.0

Also known as the fourth industrial revolution. Around the industrial revolutions there have been important technological advances that have contributed to the improvement of the processes (Neumann et al., 2021), such is the case of the first industrial revolution, in which the steam engine was invented, the second industrial revolution, brought the enhanced electrical systems, the third revolution, was focused on the implementation of information technologies and automation and, the latter, relates the greater digitisation and integration of technologies (Park, 2020) of information and the internet of things, big data analysis, among others, which in the end constitute a prominent pillar for the purposes of organisational sustainability (Enyoghasi and Badurdeen, 2021).

2.2.2.1 Intelligent manufacturing information systems

Widely introduced in regions to boost cyber-physical and digital manufacturing systems for the advancement of future manufacturing, operational efficiency and productivity in the global economy (Phuyal et al., 2020). The use of information technologies has been increasing and when introduced in manufacturing has developed computerised, flexible and integrated production, and even from business management to execution, control and supervision of production processes (Saad et al., 2021; Banda, 2014).

2.2.2.2 Technology 3DP

Known as 3D printing or additive manufacturing for more than 30 years. This technology has been implemented in large companies to transform their technologies and the development of enterprises that face more obstacles to grow (Alhonkoski et al., 2021). In this sense, Rayna and Striukova (2020) recommend, according to studies carried out, that the implementation should not only be carried out in the design and tools, but also in the production process, to generate greater efficiency and break through all the barriers faced, regardless of the size of the company.

2.2.2.3 Smart cities

Strategy used in developed countries to combine economic growth with efficiency gains, environmental improvements and project a positive image of progress (Masik et al., 2021), for this, each of its participating cities have established an implementation plan and, among the benefits they bring (Reddy, 2019), they mention that, through small or large companies making technological interventions, they help cities to go through socio-technical transitions and become smart cities (SCs). Technologies that are adopted in cities generate data that then help other companies explore new opportunities and ultimately become more competitive (Araral, 2020).

2.2.3 Sustainable supply chain management

Organisations in recent years have paid great attention to sustainability and, even more so, to their supply chain. Prasad et al. (2020), states that, organisations in certain countries like India are pressured by the government, society, customers and the market, to force them to implement sustainable supply chain practices. However, Muchaendepi et al. (2019), mentions in their research that, sustainability in an organisation requires proper structuring of elaborate and designed systems in the supply chain, from improvement, strengthening of relationships and professional skills for green practices of the staff, to the actual operations of the organisations (Tsai et al., 2021).

2.2.4 Government and foreign investments

A study conducted in Portuguese companies, led by Lopes and Simões (2020), evaluated the impact of foreign direct investment (FDI) on the capabilities of the company, generating as a result of this analysis that the existing approach to investment will go from being something closed to interactive, thus generating a significant long-term improvement in business capabilities, industry competitiveness and national economic development. And in the Latin American case, in Mexico, it was identified that the

results of FDI can be oriented towards improving business productivity, increasing economic performance and company growth, resulting in greater competitiveness, technological development, human capital formation and raising the quality of life (Rivas and Puebla, 2016).

2.2.5 Strategic inter-company alliances

There are several types of strategic alliances that can be carried out between different companies, all of them with a different approach, but seeking a common result, among them are, production, market, innovation and management alliances; these according to Ozuna (2017), bring with them, as a benefit the cooperation to produce, innovate and manage resources in a better way, being competitive in the market and providing solution to the requirements of customers and small and medium enterprises (Oseda et al., 2019).

3 Methodology

A rational, qualitative and descriptive meta-analysis was carried out by means of a systematic review of the literature of the articles in the Scopus database, considering as the main source of information different scientific articles that are related to the research topic of the concepts of efficiency, productivity and organisational competitiveness, as well as the different tools, techniques and methods associated with the thematic raised in English language, with a time horizon referring to the last five years (2015–2020). The search process on these topics was directed to different areas or organisational sectors in order to consolidate the relevant documented information that would allow the authors and the reader to have a broad vision of the subject matter and the accuracy of the results obtained. The exclusion criteria for the development of this systematic review of the literature included articles or documents from unreliable sources that did not guarantee the security of the information, value judgments and information lacking arguments or methodological and scientific coherence. The search was carried out using the Scopus database, considering as main source of information different scientific articles related to the research topic of the concepts of efficiency, productivity and organisational competitiveness, as well as the different tools, techniques and methods associated to the topic proposed in English language, with a time horizon referring to the last five years (2015–2020). The search process on these topics was directed to different areas or organisational sectors to consolidate the relevant documented information that would allow the authors and the reader to have a broad view of the subject matter and the accuracy of the results obtained. Exclusion criteria for the development of this systematic literature review included articles or documents from unreliable sources that did not guarantee the security of the information, value judgments and information lacking arguments or methodological and scientific coherence.

The following is a step-by-step description of how this systematic review of the literature was developed (see Table 1).

- Step 1 The opportunity to conduct the research was identified because the new conditions of globalisation require organisations to establish strategies and mechanisms to ensure efficiency, productivity and competitiveness in organisations, and, from this perspective, it is important to use, understand

and analyse the different techniques, tools and models on these issues that ensure the efficiency, productivity and competitiveness of organisations.

Step 2 In the importance of being able to establish in the same place the information and different data on the tools for the improvement of productivity, efficiency and organisational competitiveness, which will benefit the scientific community for future research considering compatible methodologies and/or related topics that contribute to management decision-making in the business community, was defined.

Table 1 Methodology used

Phase 1	Pacification and definition of the criteria for the revision.	Phase 2	Characterisation and analysis of the theoretical fundamentals.	Phase 3	Report of the results and recommendations.
Step 1	Identification of the opportunity of investigation for the systematic look of the literature.	Step 4	Selection of scientific articles.	Step 9	Presentation of the report of the existent discoveries of the relations.
Step 2	Definition of the purpose of the revision of the systematic literature.	Step 5	Study of the articles.	Step 10	Exposition of the results.
Step 3	Development of the criterias to obtain in for the systematic revision.	Step 6	Extraction of the information.		
		Step 7	Synthesis of the information.		
		Step 8	Analysis of the information.		

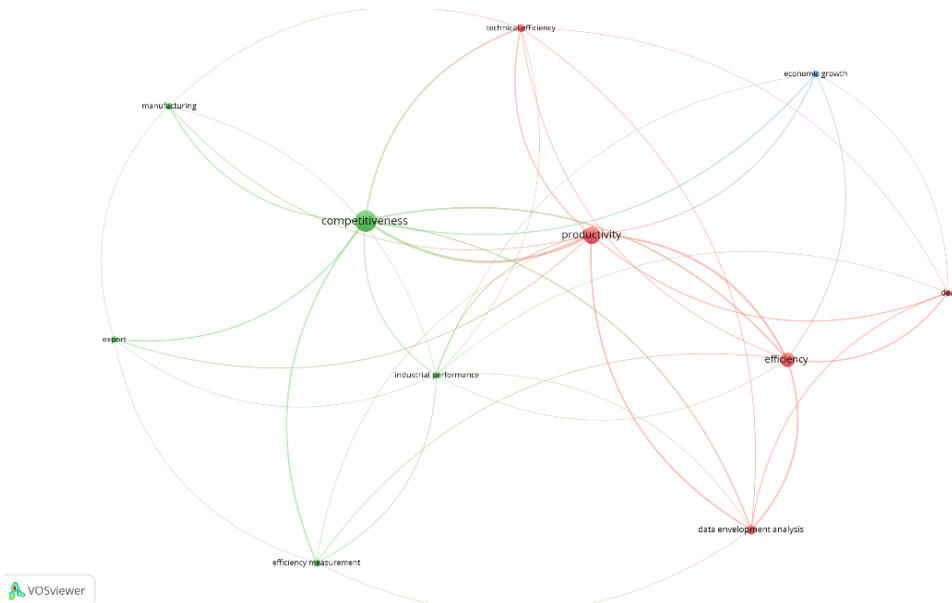
Source: Adapted from Lazaretti et al. (2018)

Step 3 In the criteria that served as filters for the search and selection of scientific articles were defined. First, the criterion of non-repetition was used, which involved eliminating redundant articles. Secondly, the temporality criterion was used, articles with publication date of the last five years (2015–2020) were included. Thirdly, the type of article was filtered, taking into account articles and systematic literature reviews, establishing as inclusion criteria articles that had open access and English and Spanish language. The thematic criterion was taken into account, establishing that only articles in the area of management and/or administration of organisations in the primary, secondary and tertiary sectors were considered. Table 2 shows the search equation with the keywords used: ‘efficiency’ and ‘productivity’ and ‘competitiveness’ and the use of the connector ‘and’, which indicates that the search will select articles containing the three words related to the title, abstract and keywords. It also presents the concurrence map of the nodes of the keywords used in research related to efficiency, productivity and competitiveness in organisations.

Table 2 Equation of chains for the search of keywords

<i>Equation of search</i>	<i>Results (documents)</i>	<i>Date</i>
TITLEABSKEY (efficiency AND productivity AND competitiveness) AND (LIMITO (PUBSTAE, 'final')) AND (LIMITO (OA, 'all')) AND (LIMIT TO (DOCTYPE, 'ar') OR LIMITO (DOCTYPE, 're')) AND (LIMIT TO (SUBJAREA, 'BUSI') OR LIMIT TO (SUBJAREA, 'ECON') OR LIMITO (SUBJAREA, 'SOCI')) AND (LIMIT TO (EXACTKEYWORD, 'productivity') OR LIMIT TO (EXACTKEYWORD, 'competitiveness') OR LIMIT TO (EXACTKEYWORD, 'efficiency')) AND (LIMIT TO (LANGUAGE, '#English'))	Scopus = 526	5th September 2020

Figure 1 Concurrency map of keyword nodes used in research related to efficiency, productivity and competitiveness (see online version for colours)



Source: Authors

Steps 4–5 In we proceed to the selection of the filtered articles from the systematic literature review previously defined in step 3, and, as a result of the application of the search criteria, a total of 526 articles were identified, after reviewing the abstract of each of them and reading their content in depth, we filtered to 33 articles, subsequently, a final selection was made to 25 articles whose results respond directly to the research questions formulated, classifying their study as follows: ten most cited articles, ten most recent publications and five most cited reviews.

- Step 6 For the following information was collected: the year of publication, the keywords, the journal in which it was published, the improvement tool applied, the methods used to carry out the research and, finally, the results obtained.
- Steps 7–8 After obtaining the aforementioned information, it was synthesised and analysed by means of tables that made it possible to identify aspects such as the tools commonly used to increase productivity and their performance in terms of results for the organisations.
- Steps 9–10 Finally, the findings of the literature review were presented. Here, the relationship between the tools for increasing organisational efficiency, productivity and competitiveness was established.

4 Results

The following is a rational and descriptive analysis of the reviews of the dimensions of organisational efficiency, productivity and competitiveness, presented in the five most cited Scopus reviews, then the 10 most cited papers and, finally, the ten most recent studies.

4.1 Descriptive analysis of the ten most cited articles

We analysed the ten most cited articles since citation-based analysis can be used as a measure of article quality on the grounds that article citations serve as an endorsement of the contribution to knowledge accumulation and development (Lazaretti et al., 2018).

Likewise, 80% of the most cited articles concluded environmental sustainability and state-of-the-art technology as a strategy to generate added value, process efficiency and, therefore, productivity for management decision-making (see Tables 3 and 4).

Table 3 Categorisation of the articles more quoted

<i>Subcategory</i>	<i>Small resume</i>
Possibilities for the next studies	Business models focused on sustainability, innovation in small and medium-sized enterprises; sustainability and innovation in service companies in tourism, restaurants, sustainability and innovation in cities in emerging countries, development and innovation in the education and health sector.
Public magazines	<i>MIS Quarterly</i> , <i>Journal of Cleaner Production</i> , <i>Technological Forecasting and Social Change</i> , <i>Cities</i> , <i>Production Planning and Control</i> , <i>Journal of Business Ethics</i> , <i>Research Policy</i> , and <i>Tourism Management</i> .
Applicability	Any organisation that considers shared understanding (i.e., social alienation) between IT and business executives at the corporate level (such as CEOs and CIOs) and the senior management team; supply chain managers and companies driving sustainability in their supply chain; manufacturing industries that have biodegradable waste; city managers and city professionals in developed countries; manufacturing companies that have an interest in adopting smart manufacturing; European organisations; low-cost airlines (LCAs).

Source: Authors

Table 3 Categorisation of the articles more quoted (continued)

<i>Subcategory</i>	<i>Small resume</i>
Methodologies	Quantitative: surveys conducted with senior business and IT executives such as chief executive officer (CEOs), chief communications officer (CIOs), ranging from medium to large companies in Taiwan; total interpretive structural model; qualitative: research agenda through questions on six research areas; systematic literature review; interviews for data collection with Italian companies; surveys of passengers using UK low-cost airlines who have experienced service failure.
Keywords	IT governance mechanisms, strategic alignment, organisational performance, degree-symmetric measures, innovation.
Principle obtain results and contributions on the studies	Theoretical framework of sustainable supply chain (SSCM);3D printing as a strategy to achieve circular economy; model linking three important issues of IT organisation and research: IT governance, strategic alignment and organisational performance; conceptual structure: trio of ‘input-process-output mechanisms’ to plan and develop a smart city; theoretical framework of operationalisation of smart manufacturing Industry 4.0; individual sustainable balanced scorecard model: modification of balanced scorecard to a sustainable structure for organisations; conceptual framework as a proposal and response to Porter’s hypothesis; EU ETS implementation model; structural equation model for creating loyal passengers; conceptual framework of big data analysis as a smart manufacturing (SM) tool.

Source: Authors

The most cited article with 223 citations was from 2015, entitled ‘How information technology governance mechanisms and strategic alignment influence organizational performance: insights from a matched survey of business and it managers’, by Wu et al., who argue that information technology governance mechanisms enable the alignment of information systems strategy with communication to all departments and, thus, increase organisational performance (Wu et al., 2015).

Table 4 List of number of articles by author

<i>Authors</i>	<i>Year</i>	<i>Number of citations</i>
S.P-J. Wu et al.	2018	223
R. Dubey et al.	2017	213
M. Despeisse et al.	2017	115
T. Yigitcanlar et al.	2018	110
H. Fatorachian and H. Kazemi	2018	109
E.G. Hansen and S. Schaltegger	2016	103
R. Ramanathan et al.	2017	100
S. Borghesi et al.	2015	98
R.K. Akamavi et al.	2015	93
S. Ren et al.	2019	92

Source: Database Scopus

These authors reveal that structures, processes, and communications are effective mechanisms for promoting the intellectual dimension of strategic alignment of

information systems, which also provides an institutionalised context that facilitates shared understanding (i.e., social alignment) between IT and business executives at the corporate level (such as CEOs and CIOs) and the senior management team. The research theoretically proposes and empirically validates a model that links three important organisational and IT research themes: IT governance, strategic alignment, and organisational performance.

The second most cited article entitled ‘Sustainable supply chain management: framework and further research directions’ in which Dubey et al. (2017), took into account sustainability as a tool to create the conceptual structure with 11 fundamental variables, which helps to evaluate, execute and diagnose the sustainable supply chain management (SCCM), employers and managers must develop skills to appropriate the structure and, likewise, increase the competitive advantage.

The less cited article entitled ‘A comprehensive review of big data analytics throughout product lifecycle to support sustainable smart manufacturing: a framework, challenges and future research directions’ Ren et al. (2019) propose a conceptual framework of big data analytics as a smart manufacturing (SM) tool, because the latter creates competitive advantage in organisations by making industries more efficient and competitive.

4.2 Descriptive analysis of the five most cited reviews of the literature

From the analysis and systematic review of the selected articles with the highest citation and most used keywords, it was identified that the concepts with the highest level of study were related to sustainability and information technology.

In the most cited article, it relates SCs and proposes a conceptual framework of input-process-output mechanisms, to plan and develop a SC, given that it enables the linking of drivers and outcomes of SCs in an effective way that advocates balanced, sustainable and competitive development (Yigitcanlar et al., 2018), whose approach is aimed at urban managers and city professionals in developed countries.

Following the same line of the use of smart technology but now applied to manufacturing industries, two reviews discussed this topic in common in which Ren et al. (2019), supported the importance of big data analysis and its influence on efficiency and competitiveness, although they were the least cited for being published recently, they agree with Fatorachian and Kazemi (2018), that manufacturing industries should be interested in the development of process operationalisation through smart manufacturing as it is expected that this industrial revolution and its enabling technologies will bring about significant improvements in efficiency, productivity and performance allowing better integration and connectivity.

The last topic that had a total of 203 citations was on sustainability in organisations, in which Hansen and Schaltegger (2016), propose a modification of the balanced scorecard to a sustainable structure for organisations, which works by including sustainability in performance measurement systems to increase productivity and execution of the strategy of organisations, likewise, Ramanathan et al. (2017), complement this contribution, mentioning that strict environmental regulation increases business efficiency and innovation, improving competitiveness which reaffirms Porter’s theory (see Table 4).

Table 5 Relation of citations for revision

<i>Final proposition</i>	<i>Title</i>	<i>Year</i>	<i>Number of citations</i>
Through the proposed framework, it enables the linking of drivers and outcomes of smart cities in an effective way that advocates balanced, sustainable and competitive development.	Understanding ‘smart cities’: intertwining development drivers with desired outcomes in a multidimensional framework	2018	110
This industrial revolution and its enabling technologies are expected to bring significant improvements in efficiency, productivity and performance through enabling better integration and connectivity.	A critical investigation of Industry 4.0 in manufacturing: theoretical operationalisation framework	2018	109
Implementation of the individual sustainability balanced scorecard for organisations’ performance measurement, productivity and strategy execution systems.	The sustainability balanced scorecard: a systematic review of architectures	2016	103
Stricter environmental regulation increases business efficiency and innovation, improving competitiveness	Environmental regulations, innovation and firm performance: a revisit of the Porter hypothesis	2017	100
Smart manufacturing creates competitive advantage in organisations by making industries more efficient and competitive.	A comprehensive review of big data analytics throughout product lifecycle to support sustainable smart manufacturing: a framework, challenges and future research directions	2019	92

Source: Authors

Table 6 Relation of documents per year

<i>Year</i>	<i>Documents</i>
2020	126
2019	107
2018	97
2017	55
2016	69
2015	72

Source: Database Scopus

4.3 Descriptive analysis of the ten most recent publications

By analysing the ten most recent published articles, using the search equation mentioned in the methodology, it was determined that during the last five years, the number of articles increased significantly, with the year 2020 being the year with the highest number

of publications, thus, the ten most recent articles were selected for the analysis of this study (see Table 6).

The quantitative approach is the predominant one in these 10 most recent articles, based on the use of statistical methods and data collection tools. However, some qualitative, descriptive and even propositional research has been carried out. Table 7 below presents a summary of this category of analysis.

Table 7 Citations of the ten most recent articles

<i>Author</i>	<i>Year</i>	<i>Cited</i>
Korauš et al.	2020	0
Jaime and Eoin	2020	0
Compagnucci and Spigarelli	2020	1
Al-Jedaiah and Albdareen	2020	0
Laksmna et al.	2020	0
Lopes and Simões	2020	4
Valamede and Akkari	2020	0
Woike and Hafenbrädl	2020	1
Denkowska et al.	2020	0
Dorogov et al.	2020	0

Source: Authors

Table 8 Categorisation of the most recent articles

<i>Authors</i>	<i>Possibilities</i>
Korauš et al.	Research on the different elements such as training, management efficiency, technology, which have a direct impact on the innovation activities of agricultural SMEs.
Jaime and Eoin	Seek to reduce the barrier between the public and business sectors, especially the aircraft parts manufacturing sector, for the adoption of manufacturing technology and innovation policy.
Compagnucci and Spigarelli	Encourage the promotion of the Third Mission (TM) as a multidisciplinary phenomenon in the social and economic evolution in academic entities, especially universities.
Al-Jedaiah and Albdareen	To investigate the effects of strategic human resource management on organisational efficiency, especially in industrial companies in Jordan City.
Laksmna et al.	To study the effectiveness generated by a good grouping of the different resources in the organisational operations of a container terminal.
Lopes and Simões	To investigate the impact of foreign direct investment on the capacity, competitiveness and economic development of Portuguese companies.
Valamede and Akkari	To study about the new Lean 4.0 approach in order to achieve an integration between manufacturing tools and technology used in companies dedicated to production.
Woike and Hafenbrädl	Investigate how different situations affect both corporate and individual competitive and cooperative behaviour, based on cooperation, interdependence theory, forced ranking, and information environment design.

Source: Authors

Table 8 Categorisation of the most recent articles (continued)

<i>Authors</i>	<i>Possibilities</i>
Denkowska et al.	To establish the impact of formal and informal education as an instrument to promote innovation and competitiveness in the countries belonging to the European Union.
Dorogov et al.	To inquire about the role of national plans in the development of the competitiveness of the state economy.
Public magazines	<i>Entrepreneurship and Sustainability Issues, International Journal of Production Economics, Technological Forecasting and Social Change, Problems and Perspectives in Management, International Journal of Physical Distribution and Logistics Management, Business History, International Journal of Mathematical, Engineering and Management Sciences, Journal of Behavioral Decision Making, and Journal of Competitiveness.</i>
Methodologies	Quantitative and qualitative approach, plant manager surveys, individual interviews, systematic literature review, descriptive analysis, and laboratory experiments.
Keywords	Innovación, Management, competitividad, eficiencia, productividad, Lean 4.0, educación, and recursos.
Obtain results	Conceptualisation and application of tools and models on efficiency, productivity and competitiveness.

Source: Authors

In relation to the most recent article entitled, dimensions and elements that affect the innovative activities of agricultural SMEs towards their sustainable development, it was identified that technological aspects, business management and a good qualification of employees, directly affect innovation in the organisation, i.e., having effective technological processes, along with cybersecurity strategies, proper management of employee relations, development of skills and learning-oriented motivation, significantly improves the level of innovation of the company (Korauš et al., 2020). Table 8, presents the categorisation of future studies to be developed, with the purpose of complementing with new contributions the results found identified by author selected from the group of most recent articles.

For Al-Jedaiah and Albdareen (2020), staff training activities are a priority to become competent as an organisation, as well as managing good practices in available resources, organisational plans, as well as considering focusing on both customer satisfaction and product quality. Other authors such as Jaime and Eoin (2020), in their article, looking for coherence between the barriers for the adoption of manufacturing technology and innovation policy, express that the development of alliances between the business sector and the public sector maximises efficiency by promoting the achievement of the company’s social purpose. In this sense, having an effective grouping between government support and business resources allows obtaining a positive and significant effect on the organisation’s performance, promoting productivity levels and business performance (Laksmna et al., 2020). Valamede and Akkari (2020), for their part, affirm that automation in processes, having greater capacity to adapt to changes and better information flows, strengthens the competitive edge of companies and, in turn, facilitates the elimination of waste, accelerating the flow of production and its corresponding operational results. Organisations that focus on competitiveness obtain improvements in

the quality of their activities, promote development and learning, improve entrepreneurship and economic development (Lopes and Simões, 2020; Dorogov et al., 2020).

5 Discussion

The results obtained in the studies regarding the concepts of productivity and efficiency show that the application of some of these tools is limited by the size of the organisation, the economic development of the country, the technological vision and the financial capacity of the company to implement these models (Sjaaf et al., 2020). Among these tools and models that have limits in their applicability, we have the strategy model to develop SCs, 3D printing, SM, sustainable supply chain and implementation of environmental regulatory policies, among other regulatory standards, as an opportunity for organisational competitiveness. As a contribution, we have the contribution of the co-adjuvants to development, such as training and learning orientation, aimed at the qualification of personnel, which are recommended to be implemented in SMEs and in companies aimed at research and knowledge generation (Walheer, 2021); these in turn, through local and foreign government support can become more productive and sustainable over time by applying cybersecurity strategies, technological processes and effective management in their processes. Innovation, as a technological model, can be developed in any company that aims to improve its processes, goods and services. Likewise, with financial support from the government, organisations could increase the learning of employees in an efficient way and their contribution to the improvement of the companies' capabilities, boosting the development and competitiveness of the organisations.

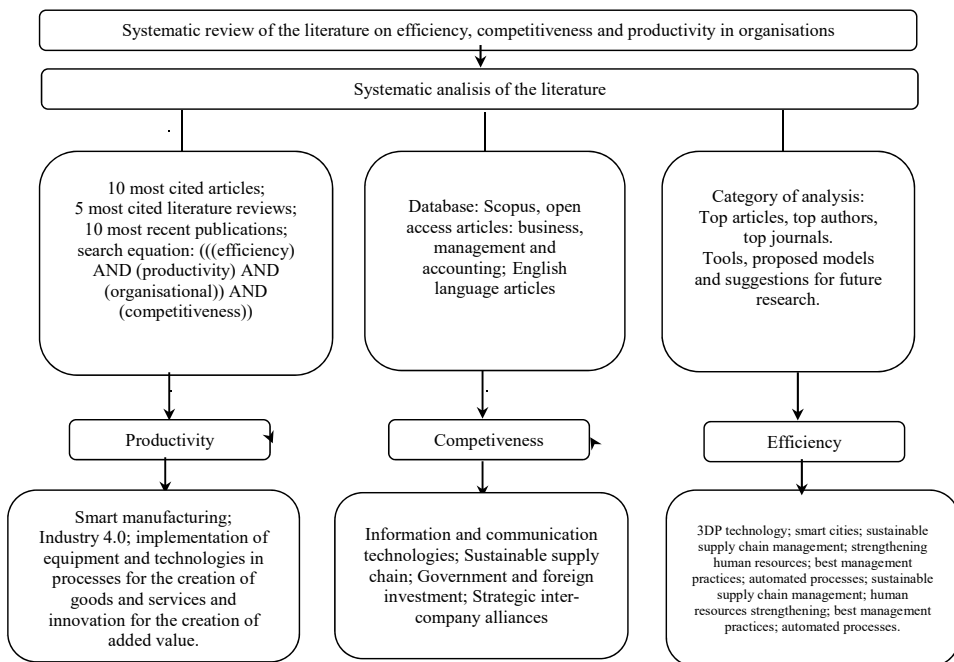
This systematic review highlights the relevance and concern of organisations in the manufacturing sector for environmental sustainability, given the importance of the pillars that support it and its contribution to the operational structures that drive productivity, efficiency and competitiveness (Zhang et al., 2020). Industrial manufacturing companies, especially aircraft parts, port and terminal activities, could improve their supply chain and process management by implementing models such as: Industry 4.0, lean manufacturing (LM), SM, use of big data analysis and cutting-edge manufacturing technology, becoming more competitive locally and internationally (Frontoni et al., 2020).

Studies developed in organisations of the industrial sector in Brazil showed the importance of technological management and implementation of innovation models that promote green production processes and the adoption of clean technologies (Tortorella et al., 2021). Likewise, Cagnetti et al. (2021) and Kamble et al. (2020) in their empirical results, highlight the importance of technological tools that support productive processes, efficiency and competitiveness of companies in emerging countries. As a complement to the results of the study, it is recommended for the development of future research, to carry out empirical research with a greater range of analysis time, on new business models focused on sustainability, innovation in small and medium enterprises, sustainability and innovation in service companies in tourism, restaurants and the health sector, among others, with the purpose of contributing with new results that facilitate managerial decision-making and applicability in terms of efficiency, competitiveness and productivity.

6 Conclusions

This systematic review of the literature shows the contributory relationship between efficiency, productivity and competitiveness, as necessary components within organisations, on which companies should focus their strategies and resources to achieve optimal results that allow them to be sustainable over time. The diagram in Figure 1 shows the synthesis of the structure used to determine the results of the research, starting from the systematic review of the literature, where through the classification of the most recent articles, the most cited systematic reviews and the most cited articles, it was possible to identify and establish models and tools for the three described in this systematic review of the literature.

Figure 2 Drawing of the review



Source: Authors

From the aspects related to efficiency, the contribution of the use of 3DP technology and SCs is highlighted, as well as the implementation of sustainable management processes in the supply chain and incentives and compensation to employees in the organisations. The training of personnel contributes to the strengthening of human resources, consolidating the integral development and good practices in process management, contributing to the improvement of automation and standardisation processes. Likewise, SM, supporting production processes with advanced intelligent manufacturing techniques, will favour the increase of productivity levels and competitiveness. In the competitive component of organisations, information and communication technology tools, sustainable management of supply chains, strategic alliances and governmental and foreign investment stand out, which promote the participation and positioning of companies in the competitive market.

Finally, we can conclude that, despite the freedom that companies have to adopt the aforementioned tools and models in their productive and administrative activities, they will only be able to innovate, develop and be sustainable by making use of new intelligent technologies, the implementation of flexible structures, management processes and human resource compensation, which would result in the improvement of productivity, efficiency and competitiveness.

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