Comparing Big Data Analytics Applications for Sustainability across Key Business Channels - SLR Approach

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Big data analytics are an important part of modern businesses because it can help them increase their value and competitive advantage on the market. These analytics can be integrated into many organizations to improve their operations and decrease their impact on the planet, by making their business channels more environmentally sustainable. This paper aims to find out how is big data used in supply chain, finance and management business channels to make their process more environmentally sustainable, and what big data analytics capabilities, companies can implement to reduce the decline of the environmental state of the planet while also increasing their own business performance. The presented research attempts to find out the answer by conducting a systematic literature review and also by providing a framework based on the literature that helps companies make more informed decisions about the environment. This framework contains a comparison of the business channels, focused on their feature similarities and differences. The results from the systematic literature review give a clear overview of what the uses of big data analytics are to make the channels greener, some of which are the improvement of possible insights, along with the reduction of waste production, resource utilization and costs.

Additional Key Words and Phrases: big data analytics, environmental sustainability, comparison, supply chain management, finance, management.

1 INTRODUCTION

Big data (BD) is one of the most important resources a company can have today to increase its value and importance in this ever-evolving economy [36]. Big data can be defined as a large group of information that cannot be analyzed anymore in a common way, but by using usual data processing technology, due to its sheer amount of data it needs to use data this processing technology on [5]. In order for companies to use this kind of data, methods such as machine learning techniques, convolutional or deep neural networks, or clustering can be used to extract relevant information from this vast sea of hidden knowledge [42]. These commonly acknowledged methods can be summarized using the term, Artificial Intelligence (AI).

BD must be stored in data warehouses, to ensure its safety and accessibility. To keep a data storage warehouse running, electricity is needed in big quantities which can affect the environment [12]. In addition, if businesses wish to use these large datasets, they have to try and be as ecologically friendly as possible in terms of their operations, to reduce the environmental impact in other areas. By reducing the effects of their operations, organizations compensate for the energy consumption produced by the data warehouses.

According to Morelli [28], the definition of environmental sustainability is that it resembles a balancing act between using the ecosystem to fulfill our needs and preserving it in order for future generations to also benefit from this environment if they wish. As a result, it is crucial to keep the biological system around us as healthy as possible. If we do not do so, besides the environmental damages that will ensue, many people will fall into poverty while the economy will also take a toll. This will lead to a hindrance of investment and consequently, of future economic yield. Moreover, technological innovation will be affected, decreasing overall economic growth [40].

The current state of the climate is dire and it will continue to be this way until we find a way to reduce the environmental damage that we are continuously causing. As Kotz et al. [21] have discovered, the costs of climate change now are six times higher than the predicted mitigation costs in 2050. This shows how urgent the situation of the environment is, and that the time to act is now.

There are a large number of papers that address the issue of environmental sustainability in organizations, such as the management of imperfect quality items [14], but these papers are focused on specific business channels, as supply chain management, manufacturing process, management, or other industries, such as agriculture and energy. To the best of our knowledge, there is a lack of focus in the literature that presents an overview of the merge of all these key business channels within organizations. The goal of this thesis is to find out how big data analytics (BDA) are used in the selected areas of an organization, i.e. in supply chain, finance and management departments of organizations to enhance their sustainable ways of operating, and also provide a comparison of how these channels differ in BDA usage. Consequently, this paper fills this existing gap by conducting a systematic literature review to answer the main research question which provides a framework that highlights the differences and similarities between the three channels.

RQ1. *How are big data analytics used to improve both sustainability and business performance across key business channels?*

sRQ1. *How are big data analytics being used to ensure that the supply chain, finance and management business channels are "green"?*

To answer this sub-question, a systematic literature review was conducted to find how BDA are used to make the mentioned business channels more sustainable. These findings are separated into categories based on which area of organizations it focuses on, and also into what aspect of the business channel it describes. This creates a better understanding of where do these analytics have the most effect.

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sRQ2. *What are the differences and similarities in which big data analytics are used for sustainability in each business channel?*

The answer to this question consists of a framework presenting the differences and similarities in which BDA impacts supply chain, accounting and management. This framework is constructed from the results of the systematic literature review from sRQ1. Possible solutions are also listed in the order of their frequency in articles in another view, to make the information be more clear and easier to understand. Along with the framework and list of features, another table containing the features distributed across the three channels is provided. The recommended framework provides organizations with the needed insight into what other solutions exist that they could use to reduce the impact left on the ecosystem by their business operations.

In Section 2 of this paper, we discuss the current state of knowledge, which helped in the creation of this paper's research questions. The description of how the articles were selected in the systematic literature review and what terms were used is presented in Section 3. Secondly, the results of the systematic literature review are discussed in Section 4, followed by the differences between the key business channels in Section 5. Lastly, the answers to the research questions and a brief summary of what was discussed in this paper are presented in Section 6.

2 RELATED WORKS

The database Web of Science[1] was used to dive into literature streams around the topics of big data, IT, businesses, and sustainability. One related study is by Shahzadi et al. [33], who did a systematic literature review focusing on the supply chain business channel and AI adoption within this field. Their findings emphasize how useful AI is, and how it can improve supply chain management (SCM), while they also present a framework that aids in the adoption of AI within SCM. Another SLR study elaborates on the uses of business model innovations and their key components, in order to help managers avoid challenges that could cause these models to lose their efficiency. This could later be translated into a loss of competitive advantage on the market, if the issues are not resolved [22]. Mory-Alvarado et al. [29] analyzed the impact of green information technologies on small and medium-sized enterprises (SMEs) through an SLR. Their work reveals what practices, policies and more, influence SMEs, by reducing costs and resources used, thus promoting a more eco-friendly way of operating. SMEs have also been compared to social enterprises to see what the differences are between the two in growth processes. The qualitative SLR conducted for this research revealed the SMEs could adopt the same strategies that social enterprises have to manage stakeholders, raise social awareness, and remodel business norms [17]. Gautam et al. [14] provided approaches to assist in the management of items with a lower quality and specified the reasons behind their appearance. The research also highlights the difficulties that companies might face when dealing with imperfect quality items (IQI), the advantages of IQI, and acknowledges that by reducing the amount of IQI, the company adheres to the Sustainable Development Goals of the United Nations.

[1]https://www.webofscience.com/wos/

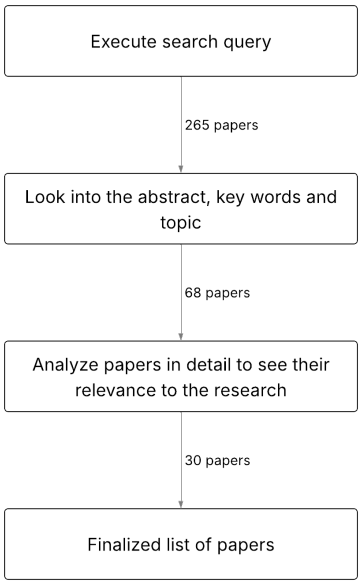

Fig. 1. The process of the SLR, to obtain the relevant paper

Two articles have been identified that have a higher focus on sustainability, unrelated to businesses or their channels, but rather on the agriculture and energy sectors. Mendes et al. [26] analyzed through an SLR how digital technologies influence the modern agriculture sector. The authors discovered eight dimensions that are influenced by the Industry 4.0 technologies, and also mentioned the challenges, barriers, and motivators of each dimension in modern agriculture. Saha and Naidoo [31] developed a framework that promotes renewable energy technologies in South Africa. They conducted a systematic literature review to analyze what the adoption impacts of such technologies are, and how the implementation can be done.

3 METHODOLOGY

3.1 Literature Review

This section explains the steps that have been taken to answer the research question and sub-questions. Firstly, a systematic literature review following the approach by Denyer & Tranfield [8] was conducted using Web of Science to gather information about the current ways big data analytics are used in the key business channels to ensure a more sustainable path of operating. This provided crucial information that helped answer the first sub-research question. The search query used for this systematic literature review is "(((large AND dataset AND analysis) OR (big AND data AND analytics)) AND (cause OR impacts OR effects OR consequences) AND green AND (decision OR decision-making OR management))", resulting in 265 articles. All the articles have been manually looked through to ensure a fit with the topic, meaning the abstract, title, and keywords of the paper were relevant before the articles were placed in a list of

Supply Chain Management	Finance	Management
optimization (11)	investment (2)	optimization (5)
eco-friendly production (4)	portfolio management (2)	decision-making (3)
decision-making (2)	transactional cost reduction (1)	–
reputation (1)	–	–
Total = 18	**Total = 5**	**Total = 8**

Table 1. Papers distribution from SLR across features and categories

possible solutions. This list initially contained 68 articles, but after a more thorough review of each of those research papers, the final list consisted of 30 relevant papers. This process can be seen in Figure 1.

3.2 Framework

Secondly, to answer the second sub-question, the solutions found for answering the sub-research question sRQ1 were used to create three categories of features, one for each of the business channels. These three lists, also referred to as categories, represent the framework proposed by this paper to help organizations understand what the most important features they can implement in their organizations towards greener operations, using BDA. The categories are "Supply chain management", "Finance" and "Management". Each category contains a ranked list of possible uses of BDA, called features, to ensure the organizational processes are sustainable, within this study. Their relevance is analyzed grounded on the frequency of the solutions in the research articles, across each business channel. The emphasis is put on the actions that have been researched and explored the most, offering those solutions a higher ranking of sustainability impact. The differences between the business channel solutions are also discussed, emphasizing how differently, or similarly, big data analytics are used in each key section of the organization. This creates a clear view of how each key business channel should be approached to improve organizational sustainable goals. Furthermore, this framework gives a better understanding of what other possible ideas of features businesses could integrate into their operations to be more environmentally conscious.

4 RESULTS

In this section, we are discussing the results from the systematic literature review. The 30 relevant papers that were found have been assigned to their respective categories: "Supply chain management", "Finance" and "Management". If some papers elaborate on the uses of BDA across different business channels, the articles would still be considered relevant, contributing to the categories they focus on. Al Halbusi et al. [1] mentioned multiple uses of big data analytics, which were categorized in the "Finance" and "Management" categories. As a consequence, the number of total found features does not align with the number of papers, but rather the features number is larger by one. The results can be seen in Table 1, with the columns representing the 3 mentioned groups, and the rows, the different features each category has. The number within round brackets after each feature mentions how many papers had their focus as that feature, within that category. The ranking order of the features is based on how many research publications had that focus.

Features	Number of papers
optimization	**16**
decision-making	**5**
eco-friendly production	4
investment	2
portfolio management	2
transactional cost reduction	1
reputation	1

Table 2. Feature distribution across categories

The last row shows the total number of papers for each group, to provide an overview of how many themes of the relevant articles are allocated for each of the categories.

Across the three groups, the "optimization" feature is the most common, with the exception of the "Finance" category, as it is the topic of the highest number of research articles in every category. The total number of papers that mention this topic, across the three categories, is 16. The only other feature that repeats is "decision-making" across the "Supply Chain Management" and "Management" classes. The other features across all categories do not repeat, and the highest ranking of these unique features is "eco-friendly production" with 4 papers. This information can be seen in Table 2, where the repeated features are marked in bold, and the rest are unique. In the instances that two or more features have the same number of papers that discuss that topic, the ranking was made based on what the author of this paper found more important. The Figure 2 shows the distribution of articles across the year of publication. From the figure, we can notice that 26.7% of the found articles were published in 2024, followed by 20% in 2020, and 2023 and 2025, with 16.7% each. The rest of the years, meaning 2022, 2021 and 2016, represent less than 20% of the total number of analyzed papers.

In the rest of this section, we discuss the three categories individually, along with their respective articles.

4.1 Supply Chain Management

The first category that is discussed is "Supply chain management". Within this category, the most frequent feature is "optimization", with 16 papers that discuss this topic. Two papers, Duan et al. [10], and Singh et al. [35], state that businesses that take advantage of BDA boost supply chain production by making their management of organizational resources more efficient, which translates into

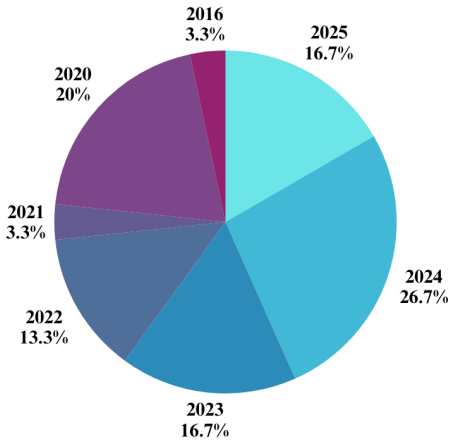

Fig. 2. Pie chart of SLR articles based on year of publication

less waste production. Similarly, another paper concludes that the usage of BDA reduces their pollution footprint on the planet by lowering the amount of management needed to upkeep their environmental information [6]. Consequently, both papers imply that by making supply chains greener, waste and pollution are reduced and handled better, leading to more optimized supply chain (SC) processes. In addition to the previously mentioned aspects, BDA can also reduce raw material waste and fuel consumption. This is done by analyzing the Global Positioning System (GPS) information from trucks, and optimizing the routes, in such a way that less fuel is used [20], creating a more efficient distribution of supplies. The manufacturing side of the SC process can be made more efficient with BDA, by reducing the amount of waste and pollution that gets produced [9], while also measuring in real time the manufacturing operation to give policymakers more information. This information can help policymakers create policies that better reflect the realities of the manufacturing process, which enhances visibility and makes the process greener [13]. Furthermore, by improving the visibility, optimizations can be implemented more easily due to being able to make changes quicker and without wasting resources.

Two other papers discuss the possibility of the insights resulting from BDA, to enhance the forecasting of changes in demand with greater accuracy [43] [19]. Despite their shared theme, their implications are not as similar, with one delving deeper into how BDA also helps in understanding the needs of the stakeholders, [43], as the other mentions that this prediction enhancement improves overall efficiency and reduces waste [19]. Shi et al. [34] recommends organizations to integrate BDA with their supply chain processes in order to increase demand visibility. These actions help businesses collaborate better with suppliers and plan efficiently, thus making the SC more optimized. Additionally, BDA can be used to enhance circular supply chain processes, since circular economy aspects have a focus on reducing waste and unnecessary resource utilization. This fits well with the capabilities of BDA, since they can enhance the circular economy aspects even more [3]. The last article from the SLR that discusses the "optimization" feature, suggests that BDA can help create insights quicker from environmental and organizational information [32]. This improvement in speed, aids in decision-making since it provides businesses the advantage to improve their SC processes, making them more sustainable which in turn enhances their value.

The "eco-friendly production" feature has three articles that talk about its topic. One of them is Rahman et al. [30], and they provide evidenve that BDA capabilities decrease costs while they also help improve inventory levels and forecasting demands. These findings can offer businesses a more sustainable way of operating because they reduce the amount of pollution released into the atmosphere, waste, and needed resources in their processes. Goodarzian et al. [15] acknowledge that BDA were used in the development of a mathematical model that helps other organizations create better carbon emission regulations and indirectly reduce their pollution production. These policies influence the supply chain and its production, which makes it more environmentally sustainable. Another paper that highlights the usage of BDA [41] demonstrate how digital technologies, such as BDA, influence the usual practices within supply chain management, by improving them and shaping them into greener variants. The mentioned operations are purchasing, logistics, and manufacturing. BDA can also make purchasing within SC be green, by minimizing the operational costs and CO_2 emissions [25]. Purchasing can be viewed as a part of the SC because, in order to have a SC running, there must be supplies to distribute. Therefore, by influencing purchasing to be more environmentally friendly, the production in itself is more sustainable.

The third feature is "decision-making", and two papers talk about this theme. Labaran and Masood [23], provide information about organizations that run in Nigeria, and one of the respondents from the study states that they use data analytics for monitoring sites, to asses how energy generator can be placed and where, using a mini-grid system. Even if the respondent did not specifically mention BDA, but simply data analytics, it can be assumed that BDA could also be used for the same purpose. This paper was considered for this feature because the site identification helps the organizations from Nigeria, plan for the future of each project. Consequently, the planning improves the decision-making process since it gives a clearer overview of what the next steps should be. The last study for this feature is Hasanova and Romanovs [16], where they explain how BDA could be used for mapping possible routes of suppliers or warehouses, which helps predict what the most sustainable and optimal path is between their logistics. This affects decision-making since, similarly to the previously mentioned paper, the analysis shows the organization what the best upcoming steps would improve their operations, and thus they can make informed decisions.

Lastly, the only article from the found papers that talks about the "reputation" feature is Anwar et al. [2]. The findings of their research reveal that by adopting a greener approach in their supply chain operations, the reputation of the company could likely increase customer and stakeholder satisfaction. Because of this, the business gains an advantage in the market, which also boosts its performance.

4.2 Finance

In this subsection, the features "investment", "portfolio management" and "cost reduction" are discussed, with their respective articles. The first feature is "investment", and two papers discuss this theme. One of them implies that big datasets bring forward more insights about investments, with the help of AI methods, such as BDA [18], and the other mentions that BDA help analyze different investments based on their sustainability impacts [1]. Consequently, both papers influence the finance side of organizations, which also improves decision-making.

The "Portfolio management" feature is also represented by two articles, one of which acknowledges the role of BDA in investment risk management. This is because, BDA provides more information about investments, which helps in deciding which ones are worth taking into consideration and which ones are not. BDA also reduce the amount of needed financial resources, which allows them to be allocated where they could bring more value to the business [44]. Sun [38] provides evidence on how digital finance, BDA included, is used to diversify portfolios through strategies that manage risks and increase transparency through real-time tracking. Therefore, organizations can enhance their investment and portfolio management strategies, generating more value. Stroumpoulis [37] is related to the last feature, "cost reduction". It acknowledges that by implementing digital technologies that include BDA, costs are decreased, and a clearer perspective is given of how the finances are handled in the business between trading partners and suppliers. As an indirect result, both planning capabilities and overall organizational value are enhanced,

4.3 Management

This section delves deeper into the features of the "Management" category. The highest ranking feature in this class is "optimization", with five articles talking about this topic. Bag et al.[4] imply that BDA improve the innovation capabilities of companies through the enhancement of the green product development process. From this information, it can be deduced that by making the innovation possibilities better, their planning is more optimized, which consequently creates a more efficient workflow. Another paper that supports the idea that BDA positively impacts sustainable innovation is Al Halbusi et al. [1]. This paper focuses more on policy makers rather than the general management of organizations, but both contribute to making operations more efficient. Managers can use BDA to reduce the negative effect of low visibility in businesses, by improving relations, communication and cooperation between business partners [27]. Better communication helps the organization plan for the future better, and therefore enhances efficiency and sustainability, since they are aware of certain issues or complexities their partners might be facing, and reduces the amount of wasted assets that could have been lost in operations. Similarly, Makhloufi [24] reports that innovation capabilities and decision-making process can be made better by providing insights and forecasting future business trends, through the usage of BDA. Leaders need as much knowledge as possible in order to make the best choices for their innovation projects, increasing the probability of that project becoming a success and reducing the chances of using more resources

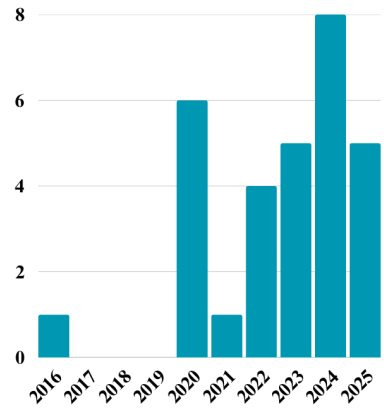

Fig. 3. Distribution of articles across the years of publication

than needed. If fewer resources are wasted on different projects, business operations and innovations, they can be distributed elsewhere, optimizing their asset management. These findings are also confirmed by Cheng et al. [7], but they also acknowledge that BDA implementation within companies can help green practices flourish, which leads to a reduction in resource consumption.

The second, and last, feature in this category is "decision-making". One research provides evidence that BDA are closely tied to leadership [11], but also to the decision-making stages of projects, along with the transition towards a more sustainable way of utilizing energy [36]. By helping the management department make better decisions, the use of BDA in the organization could increase its value and competitive advantage on the market. Another sudy that discusses this topic is Tian et al. [39], which highlights the relevance that BDA affect and quicken innovation, through offering better insights to the leadership. These insights enlarge the knowledge of the organization, thus providing a possibility to improve the quality of future decisions, as well as current ones.

5 DISCUSSION

From the results of the SLR, we can observe that two features are repeating between the "Management" and "Supply Chain Management" categories: "optimization" and "decision-making". A possible reason for the similarity of these categories could be that by optimizing the supply chain and the management departments of a company, through the already mentioned ways, the overall impact on the environment is reduced. The difference between these two categories and the "Finance" category is that the accounting department cannot be made significantly more efficient in such a way that the effect on the planet is lowered. This can also be seen in the Table 1, in that these two features are not present in the "Finance" category. However, the "transactional cost reduction" feature of the "Finance" category could be considered as a possible way of optimizing the finance business channel because by reducing transactional costs, the organization is wasting less money, and

Features	**Supply Chain Management**	**Finance**	**Management**
optimization	X	X	X
decision-making	X	-	X
transactional cost reduction	X	X	X
eco-friendly production	X	X	-
reputation	X	X	-
investment	X	X	-
portfolio management	-	X	X

Table 3. Similarities and differences between business channels

therefore, it can invest that money in other processes. Eventually, this investment could lead to a more efficient business, which, in addition to the optimized supply chain and management channels, could translate into an increase in business performance. Because of this, in the Table 3, where an overview of the similarities and differences between the business channels is presented, the feature "optimization" is checked in the "Finance" category, because indirectly, by improving the transactional costs, the finance department becomes more efficient. In the mentioned table, the features that influence the categories have been marked with an "X". The "transactional cost reduction" may also influence the management business channel since it could improve the planning for future investments to be more profitable or increase the possibility of new collaboration opportunities to appear, which could lead to an additional increase in organizational performance.

The differences between the 3 categories are the appearance of the features named "eco-friendly production" and "reputation", in the "Supply Chain Management" category and features "investment" and "portfolio management" in the "Finance" category. The occurrence of the supply chain-related features could be explained by the fact that the supply chain process within organizations is intricate and broad, containing many other smaller processes that could each individually impact the environment if not made greener. Because of this, the "eco-friendly production" feature could be the reason why it is the second most common feature within supply chain related articles. The gap between the "optimization" and "eco-friendly production" features could be due to the number of different processes that take part in the entire supply chain and their positive impact if they were made more efficient. Therefore, the pollution left behind by the organization's processes could be drastically reduced by implementing BDA in their production, manufacturing, and distribution operations. However, both the "eco-friendly production" and "reputation" features may each indirectly influence the "Finance" category, because a more sustainable production can help increase revenue due to more customers being willing to invest in a company that is more environmentally aware, but also because it increases the reputation of that organization. Therefore, if the reputation of a company increases, it may lead to a better position on the market, which could lead to a boost in value. In the finance business channel, both "investment" and "portfolio management" features have 2 related articles each. This could prove that both aspects may be equally important in an organization, since without them, the organization could not improve and increase its performance. The difference between them, however, could be which other category they may each influence indirectly. The "investment" feature could influence the supply chain channel, because investing money in certain areas of the organization, such as providing larger storage capabilities for inventory, could increase the efficiency of the manufacturing side of the supply chain. This indirectly influences the entire process, making it more profitable. Despite this, the "portfolio management" may not significantly impact either the supply chain or the management business channels besides giving the possibility to provide the organization with more money and search for new partnerships.

The distribution of papers across the year of their publication can be seen in Figures 2 and 3. From Figure 2 we can see that the majority of papers are from 2024, more precisely 26.7%, which is in line with how much interest has been concentrated in themes regarding sustainability and big data analytics in past years. From Figure 3 we can also recognize an upward trend, from 2021 to 2024, regarding how many papers have been published, related to environmental sustainability and big data analytics. One reason why 2025 has a lower amount of papers relating to sustainability in business channels could be that the year is not yet finished, and many papers have yet to be submitted by the end of the year. Another clear observation from the figure is the number of papers that have been published in 2020. The year 2020 was when the COVID pandemic lockdown occurred, but this correlation between environmental sustainability, AI, and the pandemic may be a consequence, and not a relevant insight into the focus of research papers in that period.

5.1 Managerial Implications

Organizations could use the results from BDA to guide their future planning and partnership plans by analyzing the possible suppliers based on their attention to diminishing effects on the planet. This could allow companies to find partners that are in line with their sustainability goals, causing the distribution of resources between them to be more valuable. Managers could also be aided by BDA in managing their budget needs. By reducing the transactional costs, BDA could suggest organizations different, less expensive providers that produce or offer similar quality resources or services, if integrated in the organizations. The integration could reduce the overall costs the company is spending on maintenance and production, while allowing those assets to be invested or spent on procuring greener resources for the SC, enhancing other key areas of their business.

For optimizing the operations of SC and finance, BDA could be used on the already existing information collected by the organizations in these areas, to create more efficient paths in the supply chain or more valuable diversification portfolio strategies that minimize risk and maximize profit. BDA implementations might reduce environmental footprint left by organizational production if integrated with their primary operations. The past gathered data may provide an indicator for the most ecological damaging processes, and the integration of BDA in those areas could optimize them and reduce their impact. For example, if a company's major process is the assembling of different parts, BDA could may reveal that the assembling machinery is not operating to it's maximum potential, and could reorganize the assembly line to create a more efficient and profitable process. This, in consequence, could be beneficial to both the customers and the business, because one receives their products faster and the second increase the number of sold items and it's reputation for being eco-friendly and fast in delivery.

5.2 Limitations

Through the development of this paper, some limitations and challenges were encountered that should be taken into consideration. A possible source of bias was introduced in the ranking of feature occurrences across all categories, in Table 2, when more than one feature had the same number of appearances in the resulting SLR articles. The ranking was made based on our knowledge and expertise, introducing a possible source of subjectivity. Another limitation present was in the naming of the features, since multiple papers talked about similar aspects, with varying focuses, making it difficult to distribute them correctly. To the best of our abilities, the features were named in relation to the topics and overall emphasis of the papers that resulted from the SLR. The last limitation that was encountered during the creation of this research was the time constraint of the module, not allowing for a more detailed systematic literature review. Moreover, only Web of Science was used to procure papers for the SLR, which could introduce a bias towards the type of papers that were found and analyzed.

5.3 Future Work

This section describes what future aspects could be researched in further detail, that have arisen from the creation of this paper. Firstly, a recommendation that arises from this research is an extensive review of existing literature about the possibilities of ordering environmentally sustainable business actions, and integrating the results with the findings of this research. Secondly, another systematic literature review should be conducted to improve the list of BDA uses in the three business channels. By doing so, organizations would benefit from this improvement by changing their operations to be as sustainable as possible, while also improving their competitive advantage in the market. Thirdly, a more extensive review of the literature should be done in order to achieve a less subjective naming convention for the features that were present in the SLR. Other possible future works could be to find the relationship between BDA and circular economy metrics, within SCM, or between BDA and environmental, social and governmental investing. These research directions could help companies understand what effects BDA create on the environment and their organizations, and consequently, on their business performance. The last recommendation is to do a review of the existing literature in other research databases, such as Scopus, to ensure that more papers regarding supply chain, management, and finance are taken into account, and to exclude the possibility of any biases regarding the style of possible relevant papers.

6 CONCLUSIONS

This research conducted a systematic literature review in order to understand how big data analytics are used to increase sustainability and business performance in organizations that have business channels such as supply chain, finance, and management. Resulting from the SLR, 30 relevant papers were analyzed and distributed across the key business channels, in order to find similarities and differences in how BDA are used to reduce the environmental impact of organizations, and increase business performance.

This research aims to help organizations that wish to achieve a higher level of sustainability within their processes, or organizations that are struggling to decrease their environmental impact on the planet. The findings of this research conclude that BDA can be used to reduce waste production, resource utilization, pollution caused by the organization's operations, fuel consumption, costs and different types of financial risks, while also improving the process of planning and giving insights for making better decisions. In addition to the aforementioned ways, BDA can also be used to increase visibility and transparency in the supply chain. These uses of BDA transform the existing business channels into greener variants, which reduce their impact on the environment and enhance the overall performance of the organization. The differences and similarities between the 3 business channels are that the decision-making process mainly impacts the supply chain and management channels, but optimization affects all 3, with a higher focus on supply chain and management. These findings combine to show that BDA can be used to increase performance and environmental sustainability by integrating these BDA capabilities into the three key channels: supply chain, finance and management. This paper increased the coverage of the existing literature by introducing a framework that presents the differences and similarities between these channels, while also discussing the impact of BDA on the environment and business performance.

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AI STATEMENT

During the preparation of this work, the author used Grammarly in order to reduce the number of unclear sentence structures. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.

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