THE IMPACT OF DIGITAL TRANSFORMATION ON BUSINESS MANAGEMENT

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Abstract

Digital transformation, often characterized as one of the main phenomena facing the current economy and society, exerts a strong influence on the business environment. The transition from the traditional business to the digitalized business is currently an ongoing process, as the efforts involved are not negligible and the directions of action are correlated with the continuous technological advance.

In fact, in the current context, the existence of digital components as an integrated part of business is no longer an option, but a necessity. Rethinking strategies at company level in this regard becomes one of the main requirements in order to maintain a competitive position in the market. Every company should change the way of action due to the market dynamism. Thus, involving digitalization can make the difference in the entrepreneurial result(s): profits or losses.

Building efficient, digitally oriented strategies, firstly implies understanding of what the digital transformation of business management entails. Given the previous mentioned aspects, the present paper aims to analyze how digital progress influences business management and to identify to what extent these changes can lead to increased competitiveness of companies. The research results derive from performing an exhaustive bibliographic study, which will allow a correct evaluation of the current state of research in the areas of interest.

Keywords*: Digitalization, Business, Business Management, Digital Transformation*

JEL classification: *L20, M10, O32, O33, Q55*

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1. Introduction

General views expose, in a simplistic way, "digitalization" as representing the transformation of traditional processes, undertaken by human resources through their own capabilities or through conventional support tools, in order to integrate, as a complementary part, specific ICT (Information and Communications Technology) resources. In essence, the digital progress is undeniable influencing, over time, all spheres of action of modern society.

At present, we are referring, in fact, to a real digital context which undoubtedly requires constant and continuous adaptation to it, ensuring specific competitive advantages. Closely related to the phenomenon of internationalization, the outlined situation directly influences the evolution of business management. In a way sometimes considered "aggressive", the extremely rapid digital evolution exerts its pressure on rethinking business strategies and exploring new directions of action.

Under these circumstances, given the previous mentioned aspects, the development of digital strategies at business level involves a good understanding of *what* the process of digital transformation of business management entails. Thus, the fundamental objective of this study was to evaluate the state of research on the impact of digitalization on business management. Achieving the stated purpose of the current research, implied performing a preliminary bibliometric analysis, disseminated as a three-step process:

- Overall consideration of the raw results obtained and directly observable;
- Carrying out the clusters-based bibliographic study, focused on the digitalization impact on business management, starting from the results obtained by processing relevant scientific papers, as part of the bibliometric analysis.
- Correlating the main aspects highlighted in the cluster-based bibliographic analysis and determining the overall conclusions.

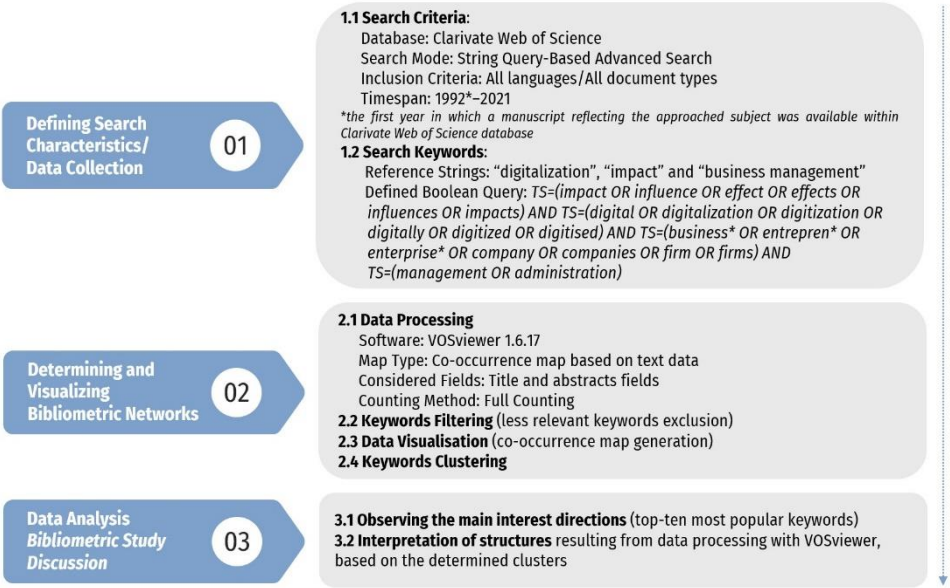
2. Data, Methods and Analysis Design

From a methodological point of view, the present paper involves both qualitative research, materialized by the predominant consideration and analysis of credible and relevant external sources, and the empirical study, involving the authors direct experimentation through performing the bibliometric analysis, in order to increase the significance of the results. Despite the prevalent analysis

of existing bibliographic scientific resources, the methodology involved in this research can be considered as laying the foundations of a proper starting point in the analysis of the digitalization impact on business management.

Considering the popularity of the approached phenomenon, given the vastness of the existing scientific resources, the present research was focused, as mentioned above, on performing a preliminary bibliometric study. The preliminary bibliometric analysis was based on the occurrence frequency of keywords, which represent a real point of interest within the scientific research, being often used in titles, abstracts and specific sections, as well as for indexing in databases. In order to perform the proposed analysis, the Clarivate Web of Science database was chosen, the followed process being exposed through Figure 1.

Figure 1: Methodology Steps of the Preliminary Bibliometric Analysis



Source: Authors' proposal

A first step of the preliminary bibliometric analysis, the importance of which cannot be denied, was to determine the keywords that reflect the

considered research topic. Starting from the reference strings "digitalization", "impact" and "business management", the Boolean query formed for the search within the chosen database resulted as a four complementary parts, as follows: *TS=(impact OR influence OR effect OR effects OR influences OR impacts)* ***AND*** *TS=(digital OR digitalization OR digitization OR digitally OR digitized OR digitised)* ***AND*** *TS=(business* OR entrepren* OR enterprise* OR company OR companies OR firm OR firms)* ***AND*** *TS=(management OR administration)*. In an attempt to reflect as accurately as possible the approached phenomenon, basic keywords were included withing the search query, but also some of their most common synonyms and relevant derivatives (represented by the "*" symbol within the query). Considering the Clarivate Web of Science database for the research in question was not accidental but was due to its popularity and recognition as one of the most reliable international databases. At the same time, Clarivate Web of Science provides researchers with multiple advanced search possibilities, through specific tags, in this case the *TS* tag serving the purpose of analysis by providing the possibility to search for keywords in titles, abstracts and specific keyword sections.

Following the database querying, 2.500 scientific papers published during 1992-2021 resulted, the reference period being the longest possible, as 1999 was the first year in which the first paper reflecting the topic was published. Subsequent import into VOSviewer software led to identifying 1.777 terms with a minimum coincidence threshold of 10 (i.e. the number of occurrences). Based on the relevance score calculated for the resulting terms, the most relevant 60% of terms were extracted, resulting in a total of 1.066 keywords. As words less relevant to the search were observed (for example: link words, names or other proper nouns, etc.) it was necessary to manually check and filter the key terms, 438 words or groups of words being included in the final analysis.

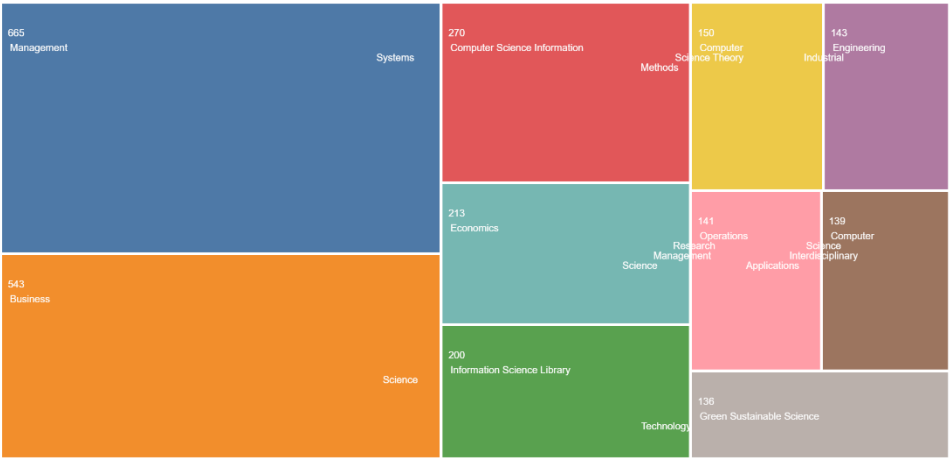
Despite the perceived incompleteness, given the limitations later detailed in this paper, the bibliometric analysis could bring to the audience's attention some notable aspects with respect to the analyzed phenomenon, but also to focus the research efforts towards new interest directions.

3. Overview on Addressing the Research Topic Within the Scientific Literature

Following the advanced search within the Clarivate Web of Science database, the raw results obtained reveal some general aspects regarding the

interest on the research topic from the perspective of the specialized literature. The approached topic, reflected through the defined query, was analyzed from multiple perspectives, the existing research covering 156 research areas withing the considered database. Certainly, each field of research is distinguished by its own importance and popularity among the audience, but the association between the phenomenon of digitalization and its impact on business management has been, over time, a topic of great interest, accounting for about 60% of the total, in areas such as: Management (26.60%), Business (21.72%) and Computer Science Information Systems (10.80%). Figure 2 illustrates the top 10 research areas within which works resulting from database query are included.

Figure 2: **Top 10 Research Areas that Include Papers Reflecting the Analyzed Phenomenon**

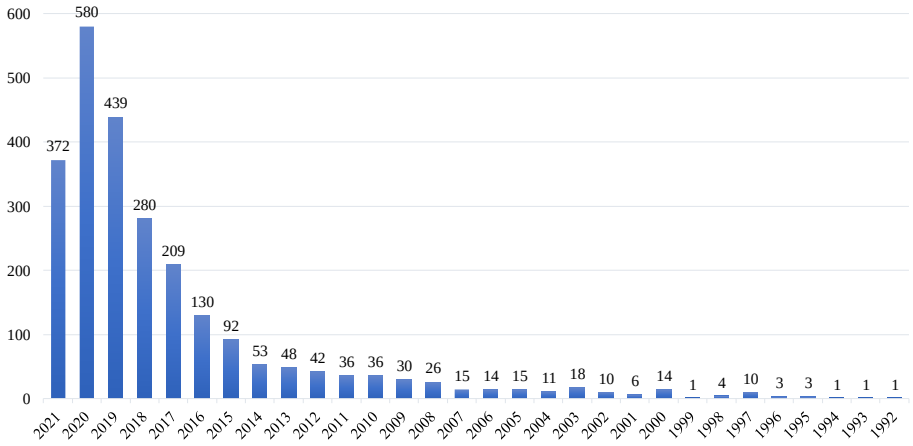


Source: Clarivate Web of Science - General results obtained after running the query

As expected, researchers' interest on the considered topic has grown steadily over time (Figure 3), along with the evolution of the ICT filed and the economy as a whole. However, the above-mentioned issues take the form of assumptions regarding the number of publications, as it can be influenced by many factors (for example: publishing opportunities existing at a certain moment in time), as it may not strictly reflect the interest of researchers over

time. At the same time, given the time when this research was conducted (mid-2021), we notice the lower number of works for the year in question, but this aspect certainly does not reflect the declining interest in the phenomenon, but only a matter of time.

Figure 3: **Distribution of Resulted Papers During 1992-2021**



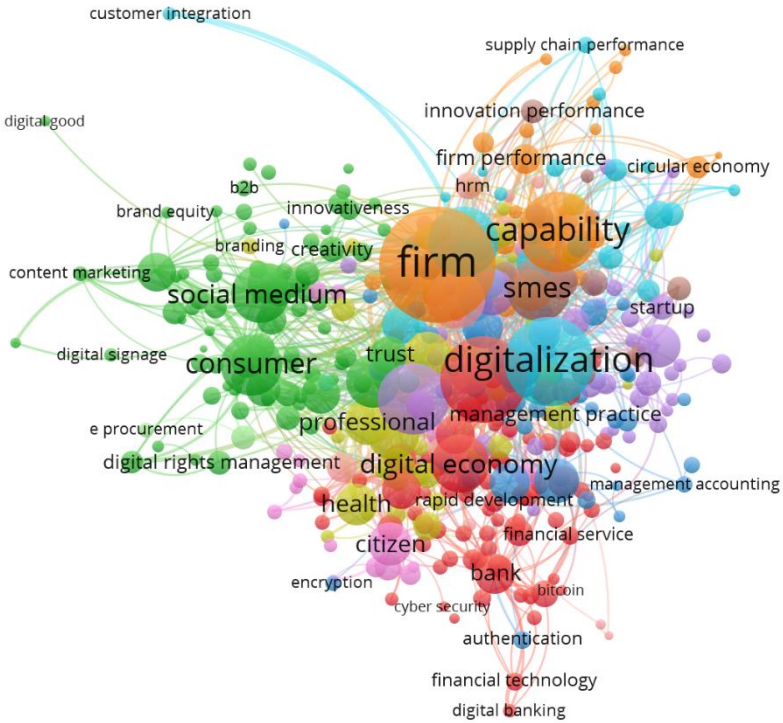
Source: Results obtained from data processing after querying the database

Unquestionably, the preliminary results made available to the authors through the Clarivate Web of Science platform highlight the progressive interest in the topic. However, the import of the resulting papers, the data visualization, and the analysis of the association between the key terms represent the steps that bring valuable information to the audience, being detailed in the next section of this research.

4. Data Visualisation and Clusters Formation

As a further step of processing the titles, abstracts and keywords resulting from the query of the Clarivate Web of Science database, the 438 key terms considered relevant for this analysis formed the keywords co-occurrence map. Figure 4 shows the associated key terms as distinct colored clusters, the size of the nodes formed by the terms included in the analysis being precisely given by the frequency of their occurrence.

Figure 4: **The Keywords Co-Occurrence Map**



Source: Results obtained from data processing via VoSviewer

With regard to the individual number of occurrences of each keyword, without considering its associations, three groups can be mentioned, as follows: keywords with a frequency of occurrence greater than or equal to 100 - 36 keywords, keywords with an occurrence frequency between 50 (inclusive) and 99 (inclusive) - 29 keywords, keywords with an occurrence frequency below 49 (inclusive) - 372 keywords. The top 10 most used key terms can be seen in Table 1.

Table 1: **Top 10 Resulted Key Terms**

No.	Term	Occurrences
1	Firm	955
2	Digitalization	565
3	Digital Transformation	531
4	Capability	473
5	Quality	371
6	Supply Chain	354
7	SMEs	278
8	Consumer	269
9	Digital Economy	250
10	Originality Value	244

Source: Results obtained from data processing via VoSviewer

Based on the results obtained (Table 1), discussing the impact of the digital transformation on business management, there are several main directions of interest in scientific research. Thus, disregarding the strings included in the search query, we observe the direct association of the phenomenon with certain words that generally reflect characteristics of the proper functioning of economic entities, such as *capability*, *originality value* or *quality*, but also other key pillars, referring to the *supply chain*, *consumer* and *SMEs*.

A point of real interest within the bibliometric research is represented by clustering based on the associations between the keywords. In this case, each node within the keyword occurrence frequency map is associated with another base node, with a maximum number of occurrences within that cluster. In the present research, processing the results led to the formation of 10 main clusters (Table 2), their number being determined by a resolution parameter.

Table 2: **Keywords Clusters Based on Their Occurrence Frequency**

Cluster no. (color on the map)	**The most common key term[1]**	**Top five most commonly encountered key terms associated with the main term within the cluster[1,2]**
1 (red)	Digital Transformation	Digital Economy, Bank, Automation, Regulation, Sustainable Development
2 (green)	Consumer	Social Medium, Community, Social Network, Brand, Commerce
3 (blue)	Business Process	Blockchain, Device, IoT, Logistic, Value Creation, Agility
4 (yellow)	Effectiveness	Professional, Database, Management Practice, Organizational Culture, Human Capital
5 (purple)	Quality	Culture, Manufacturing, Manufacturer, Digital Innovation, Startup
6 (turquoise)	Digitalization	Supply Chain, Pandemic, Supply Chain Management, Capital, Servitization
7 (orange)	Firm	Capability, Competitive Advantage, Firm Performance, Offering, Customer Experience
8 (brown)	Smes Sme	Medium Sized Enterprise, Innovation Process, Innovation Performance, Internationalization, Medium Enterprise
9 (light purple)	Citizen	Public Administration, Production Process, Public Service, E Government, Digital Service
10 (light pink)	Originality Value	Knowledge Management, Digital Era, Consumption, Procurement, Economic Growth

[1] Terms with the same meaning were also included
[2] Keywords that have an equal number of occurrences have been included, in addition to the five main key terms

Source: Results obtained from data processing via VoSviewer

As it can be observed (Figure 4 and Table 2) the red and turquoise clusters, located in the central area of the view, have basic key terms directly correlated with the digital sphere, while the blue, orange and brown clusters start from key terms reflecting the economic entity. The green and light purple clusters highlight the individual as a consumer or citizen, and the yellow, purple

and light pink clusters have as common point nouns expressing positive characteristics.

5. Cluster-Based Literature Review Discussions

The clusters briefly presented in the previous section of this paper provide the possibility to summarize the main views exposed by the existing research. Within the present analysis, in order to review the scientific literature identified as relevant, each individual cluster was considered as key landmark. Thus, through a manual and, to some extent, incomplete processing of the papers resulting from the Clarivate Web of Science database querying, the main clusters-based findings can be depicted as follows:

- **Cluster 1 (red):**

In the first cluster, red within the view, the direct association between the digital transformation and the digital economy could be easily observed. With respect to the economic activity resulting from the processes carried out based on digital computing technologies, the digital economy is, for sure, directly associated with the digital transformation. In fact, the correlation of the two concepts represents a common practice among scientific research, the terms in question being absorbed by each other to the greatest extent.

Regarding the second associated term, namely *bank*, the literature review led to the observation of a real interest on the digitalization of banking services. Nowadays, it is well known that banks are undergoing a shift from traditional forms of services to digital financial services. In this context, to a large extent, the analyzed papers either consider the phenomenon of digitalization of banking services, or treat, to a lesser extent, the digital transformation of banking institutions, taking into account the managerial implications. More relevant to the research in question is the fact that some of the resulting research papers capture or make direct reference to the companies use of technological applications, including Web applications, such as e-Banking.

Considering *automation* and *regulation* as terms associated with the term *digital transformation* within the analyzed cluster is almost imminent in the reviewed papers, as the process of automation of activities itself is part of digitalization, while the transition from traditional to digital involves specific regulations. Without focusing our attention on the two terms with general notes, the use of which is easy to anticipate, we particularly refer to the term *sustainable development*.

Most of the studies analyzed highlight the positive impact of digitalization on business management in terms of providing sustainable competitive advantages and certain possibilities for sustainable development. Exposing a positive perspective, Biloslavo *et al.* (Biloslavo, R., Bagnoli, C., Massaro, M., & Cosentino, A., 2020) highlight the potential of digital technologies to support the development of new sustainable business models. However, the authors refer to the theory of legitimacy, associating new business models acceptance with gaining legitimacy.

Recent research highlights the positive influence that digitalization can exert on increasing information processing capacity in manufacturing firms, as well as on improving the quality of decisions (Zhang, J., & Qi, L., 2021), while considering the technological factor as the mainstay for good management of key back office and front office processes, as well as for increasing business competitiveness within the industry (Farías, A., & Cancino, C. A., 2021). Previous findings highlight the increased influence of innovation management on a company's sustainable competitive advantage compared to business alliances (Mihardjo, L. W. W., & Furinto, A., 2018). Under these circumstances, researchers consider digital transformation as an important factor in sustaining business to gain a good market position and cope with adverse events.

- **Cluster 2 (green):**

Regarding the consumer and its characteristics in the context of the digitalization impact on business management, the scientific literature identifies as the main direction the development of new business models. Successful business models focus on understanding the digital consumer and serving their needs. Thus, existing research identifies at least two key points of interest: (1) developing and maintaining an online business presence, with a direct impact on the consumer's purchasing decision, and (2) digitally transforming businesses in line with the behavioral characteristics of the digital consumer.

New digitalized business models have influenced and continue to influence the consumer's purchasing decision. In this regard, reference is often made to the activity of brands in online social mediums or, in other words, to the well-known social commerce, mediated through social networks or social media. The last two key terms mentioned above are found in the second cluster, directly related to the terms *consumer*, *community* and *brand*. It was found that the content of WoM, which can have both positive and negative values, but also the observation of other consumers purchases, undoubtedly and to a large extent

influences the intention of consumers to purchase a product (Wang, Y., & Yu, C., 2017).

As per Hunjet *et al.* (Hunjet, A., Kozina, G., & Vuković, D., 2019), consumers in the digital age are no longer passive recipients, but show increased attention to information about the products they buy, while being more demanding. In fact, digital consumers benefit from almost unlimited information opportunities by creating online social connections.

Recognizing the potential of social networks and their influence on the consumer, many of the research covers aspects related to brand awareness, analyzing strategies for popularizing and maintaining the brand through online social mediums or online communities (Lipiäinen, H. S. M., & Karjaluoto, H., 2015; Kumar, A., Bezawada, R., Rishika, R., Janakiraman, R., & Kannan, P. K., 2016; Lee, Y. K., & Park, J. W., 2016; Van den Broek, T., Langley, D., & Hornig, T., 2017; Ramos, C. M., Casado-Molina, A. M., & Peláez, J. I., 2017; Grover, P., & Kar, A. K., 2020). Undoubtedly, under the given circumstances, the consumer becomes an important pawn in the process of developing customer relationships, but also online marketing (Hunjet, A., Kozina, G., & Vuković, D., 2019).

On the other hand, the digital consumer asks for business adaptation, as its characteristics regarding the purchase decision, its needs and requirements are deeply influenced by the digital evolution. Direct reference is made to e-Commerce, whose transformative capacity is recognized both in terms of consumer behavior, and in terms of business models (Ioniţă, I. M., 2017).

- **Cluster 3 (blue):**

Value creation and agility represent vital factors that support innovation and, consequently, the competitive performance of business in the current context. Directly highlighting the above, the third cluster presents, in addition, business process associations with key terms such as *Blockchain*, *device*, *IoT* and *logistic*. Given the phenomenon under analysis, we find ourselves in a similar situation to the first cluster analyzed, namely the absorption of the terms *device* and *IoT* within the term *digitalization*.

It is interesting to note the popularity of the key terms *Blockchain* and *IoT* resulting in less than a decade, a finding resulting from refining the search query in: *TS=(impact OR influence OR effect OR effects OR influences OR impacts) AND TS=(digital OR digitalization OR digitization OR digitally OR digitized OR digitised) AND TS=(business* OR entrepren* OR enterprise* OR company OR companies OR firm OR firms) AND TS=(management OR*

administration) and TS=(blockchain OR IoT). In fact, the literature takes into account the digital strategic opportunities associated with the development of companies, which naturally determines the association with the two terms mentioned above, along with others observed such as *Industry 4.0*, *Fintech*, *Big Data*, and others.

Deepening the scientific literature, a strong positive association between digitalization and the logistics of business was found (Kayikci, Y., 2018; Bienhaus, F., & Haddud, A., 2018; Fatorachian, H., & Kazemi, H., 2021), but also with value creation, by associating it with strategic agility. By theorizing, while exposing a long-term perspective, Sambamurthy *et al.* (Sambamurthy, V., Bharadwaj, A., & Grover, V., 2003) drew attention to the important role of IT as a generator of digital options for contemporary firms which, correlated with agility and entrepreneurial vigilance serve as concepts of mediation in the IT-performance relationship.

On an overall view, a large part of the analyzed research perceives agility as a precondition for the digital transformation of business, and the latter, in turn, as a key determinant of value creation. In fact, it can be considered a multi-relational and reciprocal relationship in terms of impact, in the form of agility - digitalization - value creation, and reciprocal value creation - digitalization - agility.

- **Cluster 4 (yellow):**

Effectiveness, a predominant term within the fourth cluster, is directly related, in the context of the digitalization impact on business management, to the key word groups *management practice*, *organizational culture* and *human capital*. Significant evidence reflects the fact that adaptive culture represents an important factor through which transformational leaders positively affect digital adaptation and, consequently, e-Business adoption (Alos-Simo, L., Verdu-Jover, A. J., & Gomez-Gras, J. M., 2017). Closely related to management practice and business organizational culture, the research conducted by Wrede *et al.* (Wrede, M., Velamuri, V. K., & Dauth, T., 2020) reveals that top managers undertake three key actions to ensure digital transformation: (a) a good understanding of the digitalization processes; (b) the definition of a formal context for digitalization; and (c) the actual leadership of change. Another recent thematic analysis highlights five main factors with increased potential for positive results derived from the implementation of the digital strategy, including change management fueled by long-term sustainability, which can be associated with management practice and organizational culture, while could

also be easily generalized at the level of companies operating in various fields (Ano, B., & Bent, R., 2021).

At the same time, the literature confirms that the procedural and cognitive skills developed by individuals, in this case human capital, support the digital transformation of a company (Weber, B., Butschan, J., & Heidenreich, S., 2017), which imposes the need for the existence of these skills among the workforces.

Overall, the research related to the 4th cluster includes perspectives according to which the impact of digitalization on business management materializes in the need to accept change in management practice and organizational culture, while emphasizing the imperative development of key digital skills among the workforce, but also the necessity of its continuous qualification.

- **Cluster 5 (purple):**

Within the representative scientific research, quality, as a general concept, is closely related to digital innovation. At the business level, quality can have different meanings, but, regardless of these, it certainly represents one of the company's success foundations. The review of the literature related to the 5th cluster, from the perspective of the digitalization influences on business management, led to identifying digital innovation as an influencing factor on business activities and processes, especially in the case of manufacturing companies and startups.

Depicting an overview encompassing a perspective whose significance and relevance is valid even today, Rai *et al.* (Rai, A., Patnayakuni, R., & Seth, N., 2006) suggested that integrated IT infrastructures enable the development of high order capacities to integrate the supply chain process across firms.

Also, increasing the effectiveness of firms in providing current offerings by integrating retail channels using specific IT tools, as well as increasing their ability to innovate in terms of creating future offerings, were early highlighted in the scientific literature (Oh, L. B., Teo, H. H., & Sambamurthy, V., 2012).

Relatively recent studies show that digitalization and servitization show a direct positive influence on the overall performance and, by particularization, on the financial performance of a manufacturing company (Abou-Foul, M., Ruiz-Alba, J. L., & Soares, A., 2021); Kohtamäki, M., Parida, V., Patel, P. C., & Gebauer, H., 2020); Marjanovic, U., Rakic, S., & Lalic, B., 2019). It was also found that the IT capacity of manufacturers has a real potential to reduce the

negative effect of the exercise of coercive power and the positive effect of the exercise of non-coercive power on cooperation among companies Feng, C., Zheng, X., Zhuang, G., & Li, R. (2020).

Analyzing the SMEs field, Scuotto *et al.* (Scuotto, V., Santoro, G., Bresciani, S., & Del Giudice, M., 2017) highlighted the fact that ICT tools oriented towards intra and inter organizational innovation processes have a real capacity to improve processes, in order to generate new products and/or services. However, the digitalization progress is significantly higher for large enterprises, at the level of organizational IT competence and at the store level, compared to small and medium-sized enterprises (SMEs) (Buer, S. V., Strandhagen, J. W., Semini, M., & Strandhagen, J. O., 2020).

Although the benefits of digital innovation on the firm quality have been highlighted in numerous researches, it has been shown that digitalization of business could lead to the development of value-producing activities only in the context of incorporating a digital organizational culture (Martínez-Caro, E., Cegarra-Navarro, J. G., & Alfonso-Ruiz, F. J., 2020).

- **Cluster 6 (turquoise):**

The relationship of the term digitalization with the word groups supply chain, supply chain management, capital and servitization has been found in the literature for more than a decade. In the context of the digital transformation impact on business management, the main results highlight a strong positive influence of technological tools and IT managerial knowledge on supply chain, supply chain management and servitization, often web enabled.

In addition to the above, digitalization, seen as a technological transformation of processes and services at the management level of the company, constituted a real point of interest with the emergence of the context generated by the COVID-19 pandemic, starting with 2020. The transition to technology enabled activities became a compulsory task, ensuring the continuity of economic and business activities in a crisis context.

The 6th cluster directly relates the term *digitalization* to the term *pandemic*, given the interest of researchers on recent issues. While most research examines the negative impact of the coronavirus pandemic on the business environment, digitalization is seen, to a large extent, as an opportunity to maintain, return and develop them.

In the context of the forced digitalization of companies during the pandemic, directly correlated to business management, reference is often made to the need to adapt business models in a short period of time and to the positive

potential of the process itself (Kraus, S., Clauss, T., Breier, M., Gast, J., Zardini, A., & Tiberius, V., 2020; Di Vaio, A., Boccia, F., Landriani, L., & Palladino, R., 2020; Mattera, M., Gonzalez, F. S., Ruiz-Morales, C. A., & Gava, L., 2021), as well as to anecdotal evidence regarding companies' attempts to change business models in the circumstances of the need to counter challenges (Seetharaman, P., 2020).

- **Cluster 7 (orange):**

Considering the impact of digitalization on business management, the 7th cluster can be seen as a derivative of other discussed clusters, as it aims, based on the analysis performed within the current research (with the related methodology), to associate the key terms *firm*, *capability*, *competitive advantage*, *firm performance*, *offering* and *customer experience*. The identified keywords proved, as a result of the specialized literature review, to be present and related within papers that predominantly analyze the positive impact of digitalization on the business environment.

Analytically, digitalization is characterized as a facilitator of firm performance and offerings, contributing to improving firm capability and customer experience, while those mentioned have an increased potential to sustain the company's competitive advantages development. The analysis of the cluster in question is limited to the previous mentioned general perspective, since already discussed researches including the association of related terms were frequently found.

- **Cluster 8 (brown):**

The 8th cluster predominantly describes the impact of digitalization on business management from the perspective of the internationalization of small and medium enterprises. The importance of innovative processes and innovative performance of companies in the internationalization of SMEs, directly and predominantly positively affected by the digital transformation, is highlighted.

Moreover, recent results prove that internationally oriented SMEs differ from those that are active and focused domestically, showing a higher level with respect to the use of ICT tools, actually referring to high levels in (Westerlund, M., 2020):

- use of information systems;
- the extent of value networks;
- focus on key internal resources;
- dealing with cyber security issues.

Thus, it is suggested that SMEs that succeed in achieving international performance have managed to implement digitally oriented processes, activities and strategies. As expected, the results of the revised research confirm the positive influence of the availability of modern technological tools on the international performance of SMEs, for example artificial intelligence (Denicolai, S., Zucchella, A., & Magnani, G., 2021). Therefore, it can be argued that, in the context of the availability of high-performance digital resources, the international activity of SMEs is positively influenced, from the perspective of recorded performance.

Many other research papers directly show the above, but particular perspectives suggest that, despite the fact that digitalization and sustainability are generally positively related, with the internationalization of SMEs, they are turning into competing growth paths (Denicolai, S., Zucchella, A., & Magnani, G., 2021).

- **Cluster 9 (light purple):**

The 9th cluster predominantly covers scientific papers analyzing phenomena and contexts specific to the public sector, often referring to the digitalization of public structures, activities and services in various contexts, focusing on multiple directions of interest. In this case, the literature review, as part of the present research, determined considering most of the papers within the 9th cluster outside the aim of the present analysis, these resulting only as a random association between the keywords. However, the in-depth analysis revealed some interesting information about the impact of digitalization, directly or indirectly, on business management, among which the following can be mentioned:

- public servants should consider good business management practices in the design of digital strategies, those for the development of smart cities (Pînzaru, F., Zbuchea, A., & Vitelar, A., 2018) being frequently mentioned in specialized studies;
- the quality of organizations' knowledge management is closely linked to the success of digital governance, between these two areas of interest there existing a reciprocal relationship in order to improve the public sector (Alvarenga, A., Matos, F., Godina, R., & CO Matias, J. (2020);
- government initiatives, training skills and lack of urgency, namely the regulatory factors, represent external factors that can impact the use of ICT in the business environment, especially in SMEs

(Rozmi, A. N. A., Nohuddin, P. N., Hadi, A., Razak, A., Bakar, A., Izhar, M., & Nordin, A. I., 2020).

Surely, the three aspects mentioned represent only some of the existing views found in the scientific literature, but which are frequently exposed, in another form, in other papers. Moreover, the complementarity relationship between the public and private sectors cannot be disputed, and the digital evolution within one of the two levels influences the managerial activity (and not only) within the other level.

- **Cluster 10 (light pink):**

Similar to the 7th cluster discussed, the 10th cluster encompasses, to a large extent, the perspectives presented above, regarding the positive impact of digitalization on business management, by increasing the performance of the business environment and, consequently, by generating competitive advantages based on determined originality value.

However, based on the in-depth review of the resulting papers, the possibility of improving human resource management capability through IT, which in turn can have a strong impact on overall business performance, was observed (Turulja, L. și Bajgorić, N., 2016).

Additional scientifical results analyzed highlight the relationship between knowledge management and digitalization of the company, naming the accentuated interaction between digital business innovation and knowledge management through processes innovation. In fact, recent research by Nwankpa *et al.* (Nwankpa, J. K., Roumani, Y., și Datta, P., 2021) consider digital business innovation as an *entry repertoire* that facilitates knowledge management, with a potential positive impact on process innovation.

Regarding the key term *procurement*, indicated within the analyzed cluster, certain perspectives according to which the digital transformation of the procurement process can play its beneficial role were identified: supporting daily business-specific and administrative activities; supporting organizational efficiency, cost-effectiveness and effectiveness by transforming procurement into strategic interfaces; supporting complex decision-making processes; orientation of acquisitions on strategic activities; supporting the development of new products and services or even business models (Bienhaus, F. și Haddud, A., 2018).

As expected, based on the above discussed clusters, the overall perspective predominantly considers the positive impact of digitalization in the

business management context, as a determinant of overall business performance and, as an imminent result, on the economic growth.

6. Research Conclusions and Limitations

The current research represents a fundamental first step in understanding the impact of digital transformation on business management, materializing by reviewing scientifically proven results. The research effort was focused on performing a preliminary bibliometric analysis, based on the occurrence frequency of keywords within notable studies, relevant for the analyzed phenomenon, subsequently revised based on determined clusters.

As the existence of main clusters and derivative clusters has been observed, we consider useful to briefly present the main findings regarding the impact of digitalization on business management, in order to provide an overview. Therefore, it can be concluded that the main aspects highlighted in the scientific literature, proved that the digital transformation affects business management by:

- Orienting existing business models towards digitalization, by adapting them;
- Developing new business models;
- Imposing certain changes in management practice and organizational culture;
- Increasing the performance obtained by businesses;
- Determining competitive advantages for the business;
- Increasing opportunities for business internationalization as a result of digitalization, as well as sustaining the progress and international performance of the business;
- Increasing the possibilities for sustainable business development;
- Supporting innovation, value creation and originality value;
- A better orientation towards the needs of the digital consumer;
- Increasing brand awareness.

The above mentioned issues represent, however, the results of a preliminary bibliographic research, the limitations of which cannot be disputed. We are mainly aware of the existence of limitations consistent to the search process involved in conducting the bibliometric study, namely:

- The significance of the results could be diminished due to the consideration of a single database, namely Clarivate Web of Science, but also due to the analysis characteristics involved;
- There is a possibility that certain key terms representative for the analyzed phenomenon may have been unintentionally omitted from the search query;
- The inclusion of a relatively large number of terms in the search query, in order to cover a large group of papers, also led to the extraction of less relevant papers, whose main consequence made the research process difficult, as eliminating the papers in question being necessary.

On the other hand, the actual development of the bibliographic study, in this case the review of specialized literature was limited, in the light of the following considerations:

- The cluster-based bibliographic analysis was focused on the main existing key terms within each cluster, with the top five related terms;
- The bibliographic analysis was performed considering only the papers available in English, which could lead to the exclusion of notable results from the analysis. However, given that the papers written in English represent 95.16% of the results obtained from the search in the chosen database, we assume the validity of the scientific results was demonstrated by the majority;
- This study included, by direct mention, only some of the research analyzed, considered relevant following the review undertaken.

Furthermore, special emphasis was placed on the positive impact of the digital transformation on business management, the disadvantages that may occur not being extensively addressed. This approach was taken due to the fact that the literature review revealed the existence of a reduced cluster of results that highlight less favorable influences of digitalization in the context of business management.

Despite the mentioned limitations, the present study could be considered a good starting point in understanding the impact of digital transformation on business management, but also in developing a way of thinking that leads to strategic business decisions or sustainable business strategies. Future research directions aim to extend the study in question by

reporting to additional relevant databases and to conduct first-hand research, through the direct involvement of the authors.

7. References

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