IDENTIFICATION OF FEATURES OF A GREEN ORGANIZATION BASED ON BIBLIOMETRIC ANALYSIS

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Abstract. As sustainable development has become a priority of today's global society, more and more organizations in their activities take into account the main directions of sustainable development – the closely interrelated aspects of economic development, social development and environmental development. It can be claimed that sustainable development is one of the essential preconditions for the formation of a green organization. In analysing the concept of a green organization, it is important to identify the essential features of a green organization. Scientific literature provides descriptions of certain components or processes of a green organization, which emphasize some or other aspects of the 'greenness' of organizations; however, there is a lack of the identification of a set of features of a green organization. Systematic analysis of scientific literature and bibliometric analysis were applied to identify the set of the essential features of the green organization.

Keywords: sustainability, sustainable development, green organization, features of a green organization, development of a green organization.

JEL Classification: M10.

1. Introduction

Global development trends influence the development of organizations. Sustainable development can be termed as one of the most important examples of global development trends lately. Until the 1980s, the development of society relied for a long time on the notion that a growing economy and increasing production were fundamental values and the foundation of public welfare. Rapid economic growth led to ever more intensive use of natural resources and environmental pollution, which is the seventh decade of the last century, has reached such a level that there was a clear threat to the ecological crisis. The concept of sustainable development can be seen as the beginning of the 1980s when World Conservation Strategy was prepared by international environmental organizations and institutions. The main provisions for sustainable development were drafted at the World Summit in Rio de Janeiro in 1992. Sustainable development was endorsed as the main long term ideology of societal development. The concept of sustainable development is based upon three pillars of equal importance: environmental protection, economic development and social development (National strategy for sustainable development, 2011). Economic sustainability ensures that wealth is generated at different levels of society. Social sustainability seeks equal opportunities for all members of society. Environmental sustainability means the protection and conscious use of resources. It can be stated that these established directions of sustainable development of the society have a direct effect on the development of organizations as well. For example, as society has become increasingly focused on environmental sustainability, organizations must integrate and promote environmental protection in their activities. Organizations begin to strive for sustainable business because they realize that in today's world, some customers will consciously buy goods/use services from a socially responsible organization that cares for the environment. The long-term success of the organizations depends on their ability to integrate into the environment in the sustainable way, to feel the demands of the stakeholders, and to implement the sustainable activity (Bagdonienė et al., 2009). It can be stated that sustainable development creates conditions for the formation of a green organization. The object of this research is the green organization. The objective of this paper is to identify set of features of the green organization. Methods of the research are systematic scientific literature analysis and bibliometric analysis. This paper is organized as follows. First of all, it shows contex-

© 2020 The Authors. Published by VGTU Press. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. tual background of the green organization's concept through bibliometric data analysis. Secondly, set of features of a green organization is identified. Finally, the conclusions about findings are presented.

2. Contextual background for analysis of the green organization

In recent years, organizations in their activities take into account the main directions of sustainable development - the closely interrelated aspects of economic development, social development and environmental development. According to Germain (2009), there is no doubt that the "Going Green" movement is in full swing. Nowadays, it is obvious that "green ideas" are widely spread not only in the scientific literature, but also in the social media, Internet and in the many other different fields. Green behavior in the context of sustainable development can be termed as seeking to preserve natural resources for future generations. This attitude is confirmed by Razauskas (2009), who states that ensuring sustainability should be a dynamic process, assessing the balance between different groups of society and society and nature, taking into account future perspectives. Definitely, this public attitude directly influences the behavior of business entities and organizations, thus forming a green economy, which, according to Alekna and Kazlauskienė (2019), is considered as a tool for achieving sustainable development. Alekna and Kazlauskienė (2019) emphasize that the green economy is a type of economy that is oriented towards the creation of economic welfare that has minimal or no impact on nature.

To begin with an analysis of the green organization, it is crucial to identify which organization can be defined as being green. According to Stenberg (2007), prevalent uncertainty in society concerning the interpretation and operationalization of concepts, such as 'green', 'sustainable', 'environment' and 'ecology' allows for interpretative flexibility. When starting the analysis of the scientific literature, it is noticeable that the *green organization* (also "*green organisation*") by different authors is described by different words, such as "green company", "green business". Sometimes "green management", "green entrepreneurship" are also used to define organization that is meant to be green.

For example, Karimi and Chashmi (2019) agreeing with Uslu, Hancioglu and Demir (2015) state, that green entrepreneurship is an attempt in line with economic and social conditions. Accord-

ing to authors, the best and most important goal of this type of entrepreneurs is protecting the natural environment from adverse effects and its other major goals are recycling waste and creating organic farms and agriculture (Karimi & Chashmi, 2019). Johnson (1998) based on his study states, that the social science literature on green businesses can be seen to have three major components. According to Johnson (1998), the first, and most common, is that green businesses essentially are a reflection of green consumerism. Johnson (1998), according to Spaargaren and Mol (1992), states that the second is that green businesses are a product of public policies and regulation that compel businesses of all kinds to undergo "greening", or "ecological modernization". The third core hypothesis of Johnson (1998) is that green businesses are largely a reflection of the firm or corporate worldview, or, in other words, of a "new ecological paradigm." So it is obvious that the organization's greenness is treated in the different ways. Consequently, huge amount of information by the different definitions of green organization does exist.

3. Research methodology

In order to narrow search for significant information about green information as accurate as possible bibliometric analysis of publications was done. Information search for bibliometric analysis was performed using the Web of Science Core Collection search engine of the Clarivate Analytics database. Basic search parameters were defined as such: search by name, period from 1990 Until 2019, type of documents analyzed -"articles". A search of the Web of Science Core Collection database by name was performed using keywords corresponding to the English name of the green organization and their synonyms: green organisation, green organization, green company, green business, green management, green enterprenership (search summary: TITLE: ("green organisation" OR "green organization" OR "green company" OR "green business" OR "green management" OR "green enterprenership") AND DOCUMENT TYPES: (Article). Timespan: All years). Information processing and visualization for bibliometric analysis were prepared using Clarivative analytics results analysis tool, Microsoft Office Excel and VOSviewer. Search results: 100 articles in English, which contain the keywords mentioned above. Primary search conducted in all Web of Science Core Collection database categories.

In order to determine whether a more detailed search is worthwhile, it is important to analyze in what categories of databases the results of the primary search are (Figure 1).





According to the Clarivate analytics data analysis tool, the significant amount of search results were found in Business category (29 entries), Management category (28 entries), Environmental science (20 entries). Green Sustainable Science Technology (14 entries), Engineering environmental studies (13 entries) Economics (11 records). In the other categories, the search results were divided into several entries (2-4 entries). Some of the search results were found to fall into several categories. Therefore, it was decided not to detail the search by categories and to leave 100 primary search results for analysis.

4. Research results

Figure 2 shows the distribution of the number of articles by year over the period from 1990 until 2019. The biggest amount of articles on the topic was published in 2019 (19), 2016 (13), 2015 (9), 2009 (8) and 2017 (8).

Figure 3 shows the 13 authors written the biggest amount of publications, on the subject of green organization. The most productive are A. Buzeinab, M. Arif and CJC. Jabbour, who wrote 3 articles each. The other 10 authors who are referred to in Figure 3. prepared 2 articles each. The other 87 authors, prepared 1 article each, have been excluded from the graphic representation.

The analyzed search results for the Web of Science Core Collection database include 100 articles published in 72 periodicals. Table 1 provides information about 9 journals that have been published more than 1 article on the topic since 1990 until 2019. Another 63 periodicals were published 1 article related to the green organization.



Figure 2. Distribution of the number of articles by year (created by author, based on data from Clarivate analytics)



Figure 3. Authors prepared the biggest amount of publications, related to a green organization (created by author, based on data from Clarivate analytics)

Table 1. Journals, that have published the biggestamount of the articles related to the green organization(created by author, based on data from Clarivateanalytics)

Title	Articles
Journal of Cleaner Production	10
Management Decision	7
Quality Access to Success	6
Journal of Business Ethics	4
Academy of Management Perspec- tives	2
International Journal of Production Economics	2
Processes	2
Sustainability	2
Urban Forestry Urban Greening	2



Figure 4. Countries with the highest number of published articles related to the green organization (created by author, based on data from Clarivate analytics)

In total, articles were published in 41 countries on the analyzed topic. Figure 4 provides information on the 19 countries in which since 1990 until 2019 more than 1 article on the topic was published. In the other 22 countries, one article was published during the period under review.



Figure 5. Countries with the highest number of bibliographic links for articles related to the green organization (created by author with VOSviewer software based on Clarivate analytics data)

Figure 5 graphically depicts a network of 41 countries, showing a bibliographic coupling of the countries. The network of countries consists of 12 clusters with 329 links. Information on the most significant countries and clusters is presented below. Significant amount of articles were produced in the US (green cluster, 26 articles quoted 1241 times, 36 links, 1776 links). Sweden, Slovakia, the Netherlands, Trinidad and Tobago belong to the same cluster. Another significant cluster is yellow, consisting of China (yellow cluster, 13 articles quoted 225 times, 34 links, 1340 links), as well as Singapore, Iran, Jordan. The third significant cluster is blue, it consists of Great Britain (blue cluster, 9 articles cited 78 times, 35 links, 1730 links), India, Romania, South Africa. Other clusters are less significant because their number and strength are significantly smaller.

Figure 6 graphically depicts identified 552 the most common keywords related to the green

organization. Their distribution is shown in Figure 6. A bibliometric map of co-occurrence of all keywords is provided, consisting of 25 clusters interconnected by 4,629 links.



Figure 6. Bibliometric map of co-occurrence of all keywords (created by author with VOSviewer software based on Clarivate analytics data)

Based on the significance and importance represented by the size of the circles and the strength of the relationships represented by the lines, the most common keywords by cluster are:

- gray cluster: "green management", "impact", "environmental management";
- blue cluster: "sustainability", "environment";
- yellow cluster: "performance", "strategy";
- green cluster: "corporate social responsibility", "green business", "behavior", "perspective";
- blue cluster: "financial performance", "resource-based view", "competitive advantage", "corporate environmentalism";
- green cluster: "innovation", "green business models".



Figure 7. Co-occurrence of authors' keywords (created by author with VOSviewer software based on Clarivate analytics data)

The most prominent authors identified keywords related to green organization identified 215. Their distribution is shown in Figure 7. A bibliometric map of co-occurrence of authors' keywords is provided, consisting of 29 clusters, with 598 links between them. Based on the significance and importance represented by the size of the circles and the strength of the relationships represented by the lines, the most common keywords by cluster are:

- green cluster: "green management";
- purple cluster: "environmental management";
- light green cluster: "sustainability";
- green cluster: "corporate social responsibility";
- red cluster: "green business";
- blue cluster: "green business models";
- pink cluster: "sustainable development".

To sum up, a bibliometric analysis was helpful for formulating criteria for selection of the most relevant information about the green organization. Detailed search for the information was done either by using the most popular keywords or by searching for the most authored articles related to the green organization. Also, the ability to search information by country also facilitated targeted search.

Scientific literature provides descriptions of certain components or processes of the green organization, which emphasize some or other aspects of the 'greenness' of organizations. However, there is a lack of the identification of a set of features of a green organization. After analyzing and comparing the opinions of different authors, it can be stated that there are numerous different features that characterize the green organization. It is obvious all found characteristics must be logically grouped. For this purpose it was chosen to rely on management systems theory. Bivainis (2011) note that according to general systems theory, an organization is a set of interconnected elements organized in some way. According to author, treatment of an organization as a system allows the organization to be structured – split into elements, distinguishing between elements, and defining relationships between elements (Bivainis, 2011). According to Zakarevičius (2002), general systems theory examines organizations as large, complex, dynamic, open, purposeful, manageable systems. As a system, a green organization is made up of different elements that can be identified by selecting a particular trait (which would describe the similarity of the elements). After a bibliometric analysis of the scientific literature it was decided to structure the

green organization as a system choosing resources of the organization as it's elements. In order to logically group features of a green organization, systematic approach was used and essential features of a green organisation have been classified according to the attribute of resources: organizational, human, technical-technological, financial resources that affected by the aim to be the green organization.

Table 2. Essential features of the green organization	
(created by author)	

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	Feature of the organiza- tion	Description of the green organiza- tion's feature	Authors
1	Organi- zational resources	Organizational strategic green direction: organi- zation vision, mission and strat- egy, organization- al culture, green marketing, etc.	Crane (2000); Karimi and Chashmi (2019), Depret (2013), Grant (2008), Chen (2011), Rosen- baum and Wong (2015), Arif et al. (2009)
2	Human resources	Green human resource man- agement: employ- ee engagement with green initia- tives, green re- cruitment and selection process., raising of em- ployee awareness, green employee training, etc.	Johnson (1998), Karimi and Chashmi (2019), Mishra (2017), Skačkauskienė and Kunskaja (2019) Yong and Mohd-Yusoff (2016)
3	Tech- nical- techno- logical resources	Application of modern IT solu- tions, "green in- novation", "green" approach to supply chain management, etc.	Bose and Luo (2012), Karimi and Chashmi (2019), Be- niušienė and Jankauskienė (2017), Chu (2019), Amui et al. (2017), Abdullah et al. (2018)
4	Financial resources	Allocation of a part of a budget for "green" objec- tives, "sustaina- ble" investment attraction, etc.	Valiulė and Zonienė (2019), Alekna and Kazlauskienė (2019), Awuzie and Abuzeinab (2019)

According to the selected resource attribute, four essential elements of the green organization as a system were distinguished as the most significant:

- Organizational resources;
- Human resources;
- Technical-technological resources;
- Financial resources.

Table 2 illustrates description of the green organization's features classified according to resource attribute. More detailed examples of the features of the green organization through resource attribute are presented below.

1. Organizational resources

Formation of a green organizational culture. Karimi and Chashmi, quoting Hamdouchand Depret (2013), argues that given the important role of organizational culture and the impact of individual members of an organization, even if one of the authorities responds to the green idea, the company can simply promote green entrepreneurship. Making small changes is not difficult, but it can also be the starting point for making comprehensive decisions.

Green marketing. According to Crane (2000), green marketing means incorporating environmental aspects into marketing activities.

2. Human resources

Green human resource management. Skačkauskienė and Kunskaja (2019) emphasize that employees of the green organization implement a system that aims to make the employees of the organization environmentally friendly and beneficial to the society, nature and the organization, in order to ensure environmentally friendly products, successfully implementing environmental programs, goals, contributing to environmental sustainability.

Green recruitment and selection process. According to Mishra (2017), employee selection measures the "green approach", taking into account candidates who value green practices and practice basic environmentally friendly activities such as waste sorting, reduced printing and energy storage. The author emphasizes that the selection and recruitment processes use environmentally friendly techniques such as "online" tools and limit paper consumption (Mishra, 2017).

Green employee engagement. Mishra (2017), in agreement with Quagraine (2015), claims that green employee engagement can be defined as creating an environment in which people influence decisions and actions that affect their work. Employee engagement is understood as gathering employee suggestions for new environmental strategies and getting feedback to improve existing practices (Mishra, 2017). Mishra (2017), in agreement with Phillips (2007), notes that employee engagement in green HR practices helps prevent workplace pollution and, in agreement with Tariq et al. (2016), notes that green employee empowerment is critical to improving organizational performance, when employees are motivated to achieve green goals more effectively. According to Johnson (1998), social and ecological responsibility is a moral obligation common to all employees.

Green employee training. Mishra (2017), in agreement with Zoogah (2011), emphasizes that the goal of green training and development is to raise employees' environmental awareness and knowledge, to develop a positive attitude, to take an active approach to environmental issues and to develop competence in energy saving and waste reduction. In agreement with Perrono et al. (2006), Mishra (2017) emphasizes the importance of organizing specialized and tailored environmental training based on the needs of the organization. Mishra (2017), in agreement with Jabbour and coauthors (2013), emphasizes that environmental education is one of the most important aspects of human resources practices. Mishra (2017), in agreement with Teixeira et al. (2012), emphasizes that employee training is crucial to creating a green culture within the organization.

3. Technical-technological resources

Green IT solutions. According to Bose and Luo (2012), it can be stated that responsible IT asset management, energy security, consideration of green practices by utilizing IT tools can be attributed to green IT solutions.

Green innovation. According to Karimi and Chashmi (2019), in agreement with Lin et al. (2013), the concept of green innovation is often associated with renewable energies such as fossil fuels, wind energy, etc. Thus, change and movement towards such an economy depend more on technological advances in energy than anything else.

Green approach to supply chain management. According to Beniušienė and Jankauskienė (2017), companies in the green supply chain are responsible not only for the company's processes from raw material acquisition, production, packaging, warehousing, delivery of goods to end users, but also waste recycling and disposal. The authors argue that the green supply chain covers the following areas: actors in the supply chain, green purchasing, green production, green distribution from producers to consumers and recovery (Beniušienė & Jankauskienė, 2017). Chu (2019), in agreement with Kirchoff (2011), argues that the green supply chain is perceived as a learning process, company culture, and organizational belief system that incorporates environmental responsibility, perception and management.

4. Financial resources

Sustainable investment. Valiulė and Zonienė (2019) describe sustainable investment as an investment that contributes to the goals of sustainable development. Alekna and Kazlauskienė (2019) attribute the following aspects to attracting sustainable investments: costs related to the green sector, investments in renewable energy sources, labor in the green sector.

5. Discussion

It can be stated that main features of the green features could be classified by different criterias. Afeter the analysis of the scientific literature it was decided to distinguish features by the attribute of resources. Organizations where organizational, human, technical-technological, financial resources features are oriented to become green can be called green organizations. Therefore, it can be stated that the main directions of green organization development could be named as the development of organizational, human, technical-technological, financial resources towards the green direction. The development of these resources within the organization is highly interdependent. Introducing green values to the organization's employees through a green strategy, by implementing green IT solutions, and investing in green initiatives from within the organization can gradually create a competitive advantage outside the organization.

6. Conclusions

In the scientific literature there is a lot of information about green organization by the different terms used. In order to clarify the main criterias for information search, bibliometric analysis was made. The result of bibliometric analysis shows the main authors, that study green organizations, main countries examinins this topic, main journals with important number of articles, significant keywors related to green organization's studies. The results of the bibliometric data analysis have clarified main scientific literature to analyse about the green organization. After bibliometrical analysis scientific literature analysis was made. The results of the systematic analysis demonstrated that descriptions of certain components or processes of the green organization are mostly provided, which emphasize some or other aspects of the 'greenness' of organizations. So there is a lack of the identification of a set of features of a green organization. In order to logically group features of a green organization, systematic approach was used and essential features of a green organisation have been classified according to the attribute of resources: organizational, human, technical-technological, financial resources that affected by the aim to be green organization. Main directions of green organization development could be development of organizational, human, technical-technological, financial resources towards the green direction. The development of these resources within the organization is highly interdependent. Introducing green values to the organization's employees through a green strategy, by implementing green IT solutions, and investing in green initiatives from within the organization can gradually create a competitive advantage outside the organization.

Disclosure statement

Author declare they have not any competing financial, professional, or personal interests from other parties.

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