

Theoretical determination of green intellectual capital

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INTRODUCTION

Since late twentieth century in the academic literature, dominant opinion was there had been three different eras of globalization. The first, which started in the middle of the 19th century and lasted until the beginning of the World War I; the second, which started in the 1980s and lasted until the end of the 20th century and finally, the third, which has started in 2000 and still lasts.

However, in contemporary literature, has become more usual to mention the term Fourth Industrial Revolution to describe very specific processes and relations in the 21st century in the different areas like: digitalization, environmental protection, international trade and economics and others.

Due to growing environmental threats in the last few decades, green business has become of the highest importance, especially in the high-developed countries. Also, Corporate Social Responsibility (CSR) has become of the most importance in contemporary companies. The most usual part of the CSR are environmental activities.

The importance of being green has attracted attention from both professionals and scholars over the past years. In academia, research has improved slowly from a general deliberation on green business into green functional areas within one organization, such as: green innovation [9, pp. 463], green supply chain [8, pp. 1285], green purchasing [26, pp.745], green finance [18, pp. 586], green management [14, pp. 81], green information technology [17, pp. 579] and green human resource management (HRM) [19, pp. 5], [25, pp. 970].

Nowadays, businesses operate in a highly competitive global market in which they must be not only successful and economical, but also and responsible towards environment. When the market is global

and highly competitive, the life cycle of products and services is becoming shorter, which requires companies to continuously work, stay unique and innovative. What cannot be copied and imitated are knowledge, innovations and new ideas. Around the globe, companies have adopted environmental practices at an increasing rate because of the intensification of environmental concerns. The adoption of these environmental practices bring benefits to companies becoming "competitive and green" [2, pp. 132], [5, pp. 490].

In a current and highly competitive global market, the need for a highly skillful workforce with focus on environmental sustainability is of high importance. Environmental protection is one of the twelve key levels of economic competitiveness justified by World Economic Forum [1, pp.125]. Countries' developments demand competitive human resources that are being used for improving even national gross domestic products (GDP). It was explored that these countries are main potential destinations for organizations from different industries around the world [6, pp. 15], [16, pp. 361], [20, pp. 159].

This study is a novel conceptualization of the term of green intellectual capital due to the lack of prior studies from the same topic. The paper is organized as follows. The concept of intellectual capital will be described first. Further, the determination of the green intellectual capital and its three components will be explained in order to emphasize its importance to the current competitive global environment. The paper will be finalized with managerial implications, discussions and final conclusions.

1. LITERATURE REVIEW

The issue of environmental protection was not paid enough attention until recently. Under strict environmental standards, the rise of consumer environmentalism appeared, and it changed schemes of competition around the world. Many companies saw investments in environmental management as an unnecessary investment and cost that will decrease final development. For every economy, the accent is on the utilization of already limited, but valuable resources [18, pp. 143].

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In the third era of globalization, intangible assets play a significant role for companies' competitive advantage. The company's market value is composed of financial capital and intellectual capital. However, in the new knowledge economic era, intellectual capital is always far greater than financial capital. Because of a rapid growth of advanced technology, Internet and service industries, the gap between financial capital and intellectual capital have been increasing continuously. Since traditional valuation system no longer can follow company's value, therefore, the attention was changed from tangible assets to intangible assets that represent intellectual capital. The twenty-first century has become well-known by culturally and environmentally diverse countries spread all around the world [20, pp. 775]. Green intellectual capital, but green human resource management (HRM) in general are important because of several reasons.

First of all, many environmental incidents have appeared all over the world. Second, industries use natural resources up to the highest levels for producing products and services that result with industrial wastage and pollutions. Third, global warming, ecological imbalances and air-pollution are by-products of the excess consumption of natural resources. In order to achieve its sustainability; some researchers have offered the idea of high importance of organizations' HRM.

Milliman [13, pp. 40] suggested that green HR practices are important to different organizations in promoting and supporting its sustainable development efforts. We may also say that this innovative approach is in line with the Sustainable Development Goals of the United Nations (SDG), especially emphasizing innovation and innovative solutions.

In order to remain unique and different on the global market, companies pay more attention to intellectual capital such as skills of employees, know-how, software, patents, brands, databases, customer databases etc. Effective and efficient management of these intellectual resources leads to the production of new values and benefits. Reporting and measuring the whole process has crucial consequences not only for all the members of the company, but also for the general public and investors.

All the above mentioned reasons influenced the research motivation to choose a topic that will not only be, current and modern, but also practically probable. The interest of intangible assets, intellectual capital, investments in intellectual capital, knowledge management, performance measurement is of higher or lower importance in each sector of activities, in each company. It is becoming more and more common for companies to integrate intellectual cap-

ital and some of the components of intellectual capital in their official annual reports, which is a sign that companies are paying much more attention to it nowadays. Academics have been exploring these topics intensively through their profession or otherwise during the last two or three decades which is confirmed by a large number of publications from all around the world. Since a lot of academic and empirical work regarding the given topic has been done until now, the development of advanced technology, the Internet, start-ups, intangible assets, etc. comes as no surprise. Academic work has just pointed to the potential that will emerge in the future.

1.1. Intellectual capital and its main elements

In the knowledge economy, the financial performance of a company is always under first observation, not only by internal users of financial information, but by external users as well. Company's value maximization is generally considered to be one the most important objectives of every company. The company's financial performance is under direct or indirect influence of invisible assets and resources posed by a particular company. Those invisible assets or resources are called intellectual capital.

The intellectual capital has been seen as one of the most important company's resources in the 4.0 digital era. Taking into consideration high importance of innovativeness, the intellectual capital is a key strategic resource for achieving necessary competitive advantage. By intellectual capital we mean the sum of intangible and intellectual resources, which are essential for achieving competitive advantage and sustainable development in the third millennium [22, pp. 241].

Intellectual capital consists of three important segments. These are: human capital, structural or organizational capital and relational or consumer capital.

Human capital is one of the most important elements of intellectual capital. Human capital means investing in the knowledge and skills of employees and their ability to apply knowledge and skills in practice and thus create additional value for the organization itself. All employees' skills, knowledge, experience are included in the human capital. These elements are not owned by one company.

Structural or organizational capital includes all those factors that remain parts of the organization even after employees leave the organization. These factors are, above all, organizational processes, organizational systems, organizational culture, databases, R&D activities, organizational processes, operations, and intellectual property. On the other hand, these elements are owned by one company, when

all employees go their homes and leave their workplaces.

Relational or consumer capital encompasses the organization's relationships with the external environment, e.g., consumers, suppliers, competitors, public, government, shareholders, etc. This capital comprises three elements. These are: business networks, brand and consumers (consumer relations).

The studies of intellectual capital (IC) have been in the center of attention to different authors for a few decades by now. Intellectual capital is the total stocks of all intangible assets, capabilities and knowledge that can further create new value and increase competitive advantage. Different authors proved that intellectual capital influences highly positively on company's competitive advantage. At the same time, there are many studies that proved opposite, or proved neutral relation [25 pp. 160]. There are many studies that prove how important intellectual assets are for company performance. Taking into consideration that intellectual capital is not-physical and that it belongs to the people's mind, it is very hard for companies to obtain that value for themselves. Companies usually try to transform that human capital or knowledge into an intangible, formulized and conceptualized asset that is recognized by the international standards (patent, trademark, copyright, prototype, customer list, marketing campaign, etc.).

This study refers to the paper published by Chen [4, pp. 275] that applies the concept of intellectual capital in the environmental protection and green innovation manners, and produces the term of green intellectual capital for the first time. The focus is not only on achieving company's economic goals, but at the same time to stay sustainable.

1.2. Green intellectual capital

Definitions of green intellectual capital are scarce in the management literature until now, mostly because the first studies about the green intellectual capital appeared relatively soon. In most of theories, green intellectual capital is defined as intellectual capital to satisfy the environmental management needs.

Chen [4, pp. 272] defined green intellectual capital as the total stocks of all intangible assets, knowledge, capabilities and relationships that are related to green innovation and environmental protection on the both levels, individual and organizational.

Chen [4, pp. 282] mentioned that no research had explored intellectual capital in accordance to green innovation or environmental management. The same author from the same study discovered

that companies investing in green intellectual capital cannot meet strict international environmental regulations, but also obtain necessary competitive advantage. This is important qualification for companies in order to attract talents, achieve competitive advantage, but still remain responsible to environment.

According to Liu [10, pp. 554] green intellectual capital is the integration of green and environment knowledge sources of companies in their efforts of achieving competitive advantage. Green intellectual capital is the sum of all knowledge that one organization is able to leverage in the process of environmental management and generating benefits [11, pp. 25].

Green intellectual capital allows companies to follow very strict international environmental standards and rules in order to meet growing environmental awareness among consumers [7, pp. 1410]. The literature has identified three main components of green intellectual capital, namely: 1) green human capital; 2) green structural capital; and 3) green relational capital [24, pp. 366].

Green human capital

Green human capital is the sum of employees' skills, knowledge, capabilities, experience, creativities, attitude, wisdom and commitments about environmental protection and green innovation that are within an organization [4, pp. 279]. Furthermore, the green human capital is the driving green intellectual capital component for green structural capital and green relational capital [3, pp. 52]. These components are owned by companies and cannot be imitated. Green human capital is composed of implicit or tacit employees' knowledge that are invaluable asset in achieving successful final performance [12, pp. 881].

Green structural capital

Green structural capital is defined as total stocks of organizational capabilities, knowledge management systems, information technology systems, operation processes, organizational culture, trademarks, patents, reward systems and organizational philosophies [4, pp. 285]. Green structural capital is institutionalized knowledge in the forms of technologies, policies, organizational culture and organizational processes [22, pp. 241]. The assets are very valuable and owned by one company [22, pp. 245].

Green relational capital

Green relational capital are all stocks of company's relations with external stakeholders, such as customers, suppliers, government, competitors, partners, and other partners about corporate environmental management and green innovation that

allows creation of future value and economic benefits [4, pp. 283]. According to Tumwine [21, pp. 213], and Welbourne and Pardo-del-Val [23, pp. 490], green relational capital recently became a main concern for major companies' stakeholders. Green relational capital are all intangible assets that nurture quality relationships outside of company that may impact position of business positively in a sustainable manner.

2. DISCUSSION OF MANAGERIAL IMPLICATIONS

From a managerial perspective, this study has a several implications, especially for policy makers and business professionals. Focus on green intellectual capital as a company's main resource can improve its cleaner production capabilities and sustain manufacturing competitiveness. Because environmental skills and knowledge are hidden in employees, it is important for companies to attract only the best human capital and to develop it with other two green intellectual capital components, structural capital and relational capital. Managers must establish and develop better organizational capital by strong environmental culture and sufficient information system.

Further, managers should develop sustainable relationships with key company's stakeholders, strategic partners, customers that allow a company to facilitate environmentalism, information-sharing and enhancement of organizational knowledge. Only in a combination, these components can contribute to the development of a green organization. It is not possible to expect higher results without parallel development of all three green intellectual capital components at the same time.

Another significance is to inspire future managers to invest in their company's intellectual capital on a long-term basis mainly because it will produce more constant and longer benefits for the company. These kinds of benefits are not possible without capitalization and transformation processes within a company. It is up to managers to make decisions regarding this issue and to capitalize investments because, otherwise, investments will remain only as expenses in a company's accounts.

One of the most important implications within green organizations is also promotion of so-called new organizational values as important parts of the middle level of the organizational culture. Managers should create main organizational values in order to improve environmental consciousness, raise awareness of the main environmental issues and strengthen corporate social responsibility (CSR) activities. That also means one step forward for business ethics.

CONCLUSION

A tree will grow and flourish healthily to produce fruits only if it receives and absorbs enough rainfall from the sky and light from the sun in a natural environment. The tree lives according to all natural rules, disciplines, conditions and, in that case, produces necessary fruit products. The tree normally consumes all the necessary resources for its purposes to produce maximum outputs every and each time for the benefits of all forms of life. What is visible to the human eye are all fruit products, trees and leaves. However, what is not visible are roots under the ground. The same applies to intellectual capital. Everything visible are new products, new services, new processes, new procedures, new systems, new employees, new structure. Everything not visible are all components and inputs that created previous elements that are visible, and those are: intellectual capital, human capital, organizational capital, relational capital, knowledge, ideas, innovation, information, competencies, skills, capabilities.

Intellectual assets represent a substantial part of one company. Intellectual assets are a generator of value based on knowledge. Intellectual assets are invisible and non-physical substances that are difficult to be measured, understood and defined. It is without a doubt that intellectual assets are a source of a competitive advantage and increase of future value. However, they do not influence value creation directly, but rather indirectly. Intellectual capital is defined as a combination of its three components that creates future economic value. The main ability of a company today is to transform an idea or innovation into conceptualized and recognized economic value.

Nowadays, intangible assets are playing a key role in company performance. Two major forces have led them to that position over the past few decades: globalization and advanced information technology. In a highly competitive global market, intangible assets are the key success factors because intellectual assets provide a competitive advantage. Understanding the valuation of intellectual assets is the basis of management decision processes. When the market is global and highly competitive, the life cycle of products and services is becoming shorter, which requires companies to continuously work, stay unique and innovative. What cannot be copied and imitated are knowledge, innovations and new ideas.

Companies are encouraged to adopt green practices in their business as a cause to the enormous attention given to environmental issues nowadays. Sustainable business success of one company is achieved through human resources. Further,

going green in HRM is fundamental to increase its competitive advantage and better economic performance. To generate better results, it is up to the companies to understand importance of green intellectual capital and adoption of different HRM practices within company. Building one green organizational identity is possible only with enhancing companies' potential through green intellectual capital.

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ABSTRACT

THEORETICAL DETERMINATION OF GREEN INTELLECTUAL CAPITAL

The fourth industrial revolution has become one of the most significant terms in the 21st century, emphasizing all advantages and disadvantages of the so-called new modernity. The most important characteristics of this revolution are innovation, innovative technologies but also innovative solutions in contemporary business surrounding. During the last two decades, the business and global environment have progressively been transforming into knowledge-based, fast-changing, technology-intensive in which investments in human resource, information technology and research and development have become essential for the purpose of improving a company's competitive advantage and final performance. In order to remain unique and different on the global market, companies pay more attention to intellectual capital such as skills of employees, know-how, software, patents, brands, databases, customer databases etc. Effective and efficient management of these intellectual resources lead to the production of new values and benefits. Green intellectual capital has become of the significant importance in the contemporary business practice. In line with global trends and Sustainable Development Goals of the United Nations, environmental skills and knowledge within the organizations has also been in the center of the academic research and analysis. In this article, the authors will try to determine main theoretical elements of the concept of green human resource management and also green intellectual capital as well as main managerial implications of these concepts in contemporary organizational practice.

Keywords: fourth industrial revolution, green intellectual capital, green HR management, competitive advantage.

IZVOD

TEORIJSKO ODREĐIVANJE ZELENOG INTELEKTUALNOG KAPITALA

Četvrta industrijska revolucija postala je jedan od najznačajnijih pojmova u ovom veku, uz naglašavanje svih prednosti i nedostataka tzv. nove modernosti. Najznačajnije karakteristike ove industrijske revolucije su svakako inovacije, inovativne tehnologije, ali i inovativna rešenja koja se primenjuju u savremenom poslovnom okruženju. U poslednje dve decenije, poslovi i globalno okruženje su se progresivno transformisali bazirani na znanju, brzim promenama i visokim intezitetom tehnologija u kojima su investicije u ljudske resurse, informacionu tehnologiju i istraživanja i razvoj bile esencijalne u svrhu poboljšanja konkurentske prednosti i finalne performanse kompanije. U cilju da održi unikatnost i različitost na globalnom tržištu, kompanije sve više obraćaju pažnju na intelektualni kapital kao što su veštine zaposlenih, znati-kako, softvere, patente, brendove, baze podataka, baze kupaca, itd. Efektivni i efikasni menadžment ovih intelektualnih resursa dovodi do proizvodnje novih vrednosti i benefita. Zeleni intelektualni kapital je postao izuzetno važan deo savremene poslovne prakse. U skladu sa ciljevima održivog razvoja Ujedinjenih nacija, veštine i znanja unutar organizacija, usmerenih ka očuvanju životne sredine, postaju u središtu akademskih istraživanja i analize. U ovom radu autori će pokušati da objasne ključne teorijske elemente koncepta zelenog upravljanja ljudskim resursima (HRM) i zelenog intelektualnog kapitala, kao i ključne menadžerske implikacije ovih koncepata u savremenom organizacionom okruženju.

Ključne reči: četvrta industrijska revolucija, zeleni intelektualni kapital, zeleni menadžment ljudskih resursa, konkurentska prednost.