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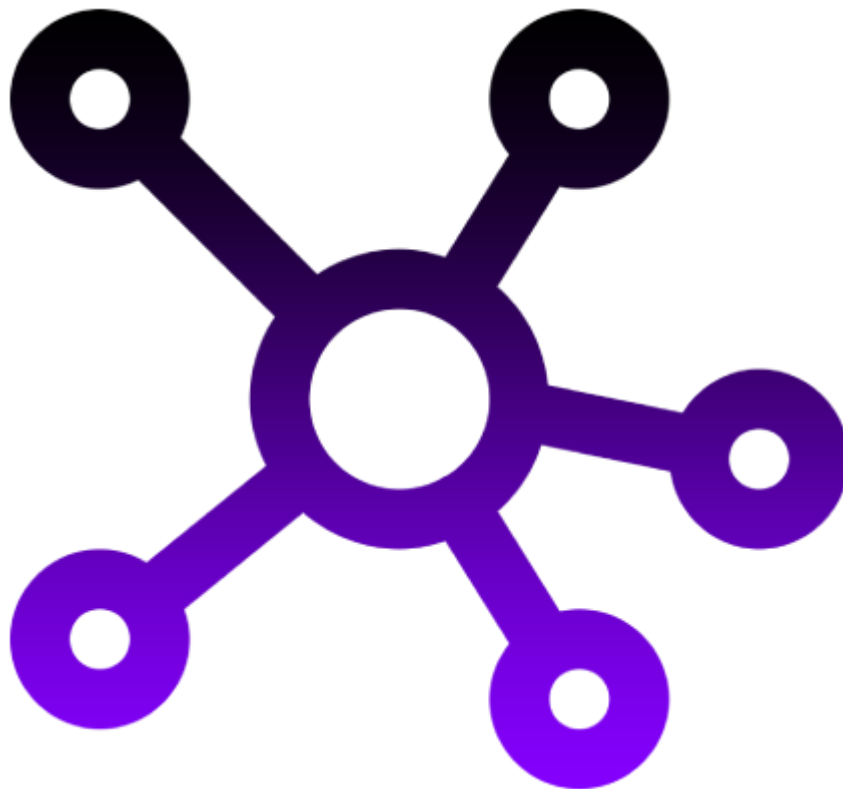
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## DIFFICULTIES IN MANAGING DIVERSITY IN GEORGIAN EDUCATIONAL ORGANIZATIONS

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### ABSTRACT

The twenty-first century can be boldly called the century of globalization. In the process of globalization, the study of the differences between the peoples of different countries, based on the study of labour diversity, becomes relevant. Due to the fact that the current socio-economic development of Georgia is not so favourable, Georgia needs to occupy a certain niche in different markets of the world, for which it is necessary to introduce many innovative models in all spheres, including management, and this is a difficult process considering various factors.

**Objectives:** To increase the productivity of human capital, certain processes need to be implemented. One of the first steps is to set up a team within the company, each member of which feels that he/she is an important part of the main goal or strategy of the company and that he/she has an important role to play, the responsibility for successful implementation as a common and team process.

**Methods/Approach:** Both qualitative and quantitative studies carried out in three educational institutions in Georgia.

**Results:** As a result of the main analysis of the study and its judgment, the main measures for improving the efficiency of a diverse workforce are outlined and a concluding part is offered.

**Conclusions:** Difficulties of teamwork that take place in Georgian companies are discussed; Also, the focus is made on the problems identified in the personnel management process and the mechanisms for overcoming them.

**Keywords:** labour, workforce diversity, company management, cognitive dissonance, discrimination

**JEL classification:** J5, J70, J71, J83, M1

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### INTRODUCTION

Organizations are complex adaptive systems. Since the environment in which they exist is constantly evolving and changing, they must keep pace with the changes. In a world that is becoming more and more complex socially, politically, and economically, the adaptation process never ends. Organizations have to work in an environment where components are sometimes so closely interconnected that changing one of them may have an unpredictable and uncontrollable effect on the other. Research shows that this complexity is the biggest challenge for today's world leaders. (Mushkudiani, Gechbaia, Gigauri & Gulua, 2020) Management in the



modern environment becomes more humane and human-centred (Gigauri, 2021; Gulua, 2020A). It is also important to identify management difficulties in the context of workforce diversity and to develop ways to ensure them (Gulua, 2020B; Gigauri, 2020A). The topic is important as the diversity of the workforce is one of the most difficult and delicate issues for the management of any organization.

Important issues related to the diversity of the workforce, such as emotions, attitudes and job satisfaction, are very interesting and deserving of attention. Organizational commitments and job satisfaction trends that are directly related to work performance (Shonia, Mushkudiani, Shalamberidze & Janelidze, 2018) are relevant and improving them is a number one priority for any manager.

## Methodology

The purpose of the study was to examine the attitudes of employees towards diversity management in their respective educational institutions.

Both qualitative and quantitative studies have been carried out in three educational institutions in Georgia. The anonymous questionnaire survey was used as the main method of quantitative study through a pre-prepared questionnaire. The population of the survey was 719 people; 425 respondents filled in the questionnaire.

## Results

Organizations today most of all need successful leaders at all levels of management, as well as effective followers to help them achieve their goals. Followers can no longer shrug off responsibility and shift it onto someone else. Their duty is not to obey the leaders without objecting, but to defy them if necessary. At the same time, they must constantly accumulate new ideas and show creativity in the process of activity (Gechbaia & Mushkudiani, 2016) effective followers must respect the leaders and constantly keep the main goal in mind - to focus on successful collaboration with the leader in order to achieve the main goals and mission of the organization. Only this kind of effective collaboration can yield the best outcomes (Faresashvili & Keshelashvili, 2010)

One of the most important challenges organizations face is getting used to different people. We use the term “workforce diversity” to describe this problem. Globalization is about differences between the peoples of different countries, while the diversity of the workforce discusses the differences between people in those countries.

Workforce diversity has become a pressing issue for management as organizations gradually become more diverse in terms of gender, age, race, ethnicity, sexual orientation, or other characteristics. Members



of diverse organizations are: women, persons of color, people with disabilities, the elderly, representatives of sexual minorities, etc (Robbins & Judge, 2008)

Diversity is at the core of every organization. A deep interest in diversity should be a central priority in all aspects of doing business. Diversity leads to differences, and differences, along with generating new ideas and many important benefits, create potential relationship problems. This is an important challenge and cannot be denied, but it is also very important that diversity includes a huge potential of opportunity.

In Canada and Australia, for example, managers have to adjust to the large influx of Asian workers. In South Africa, blacks are gradually getting employed in important technical and management services. In Japan, women who have long worked in low-paying, temporary jobs have taken up managerial positions. With regards to this issues the EU Trade Cooperation Agreement, which opened the borders for most Western European countries, has had a significant impact on these issues, which in turn has led to an increase in the diversity of the workforce in organizations operating in the EU member states.

Managers have to change their stigmas, change their principles, understand the differences between employees and act in accordance with these differences in order to retain employees and at the same time increase their productivity. This change means, for example, providing various trainings and improving benefit programs to meet the different interests of staff. Diversity, when managed properly, can foster creativity and innovation in organizations, and improve decision-making by taking into account different perspectives on problems (Mushkudiani & Dzotsenidze, 2019). When diversity is not properly managed, the likelihood of labor outflow, communication difficulties, and conflict between people increases.

If modern managers fail to realize the fact that they should generally try to improve quality and productivity only with employees, then they should understand the unintended consequences. Therefore, they should not only become a key force in implementing change, but also be actively involved in planning for that change.

Workforce diversity can be viewed in both demographic as well as social and cultural contexts. Its main categories include the following (Mullins, 2007).

► **Gender.** In most countries of the world, the share of women in the labor force is increasing. Organizations should ensure a hiring and employment policy that creates equal opportunities and access for all people, regardless of gender.

► **Race.** Organizations must ensure policies that create equal opportunities and access for all people, regardless of race.



► **Nationality.** The share of immigrants or workers from countries whose native languages are different is increasing.

► **Age.** Recent statistics show that more and more employed people are trying to work until reaching retirement age. Organizations cannot discriminate against employees on the basis of age, and they must meet the needs of older workers.

► **Disability.** Organizations need to ensure that services and jobs are accessible to people with physical disabilities. However, in this regard, we think that the state should also contribute in terms of introducing certain incentives.

► **Family partners.** Gradually more gays and lesbians are demanding the same rights and benefits for their partners at work that organizations offer to employees in traditional marriages.

► **Religion.** - In organizations, the governing body must give due consideration to both Christian and non-Christian employees of different confessions (Judaism, Islam, Hinduism, Buddhism), as well as their customs, rituals and holidays, as well as their appearance and dress. Organizations must ensure that these employees are not treated differently because of their appearance and activities, so that they do not perceive themselves as victims of discrimination.

► **Customer diversity** - Diversity management implies equal treatment of diverse customers. Today, the majority of the workforce in developed countries works in the service sector. For example, 80% of the US workforce is employed in the service industry. In the UK, Germany and Japan, the percentages are 69, 68 and 65%, respectively. Service sectors include: technical support workers, catering staff, sales agents, waiters, babysitters, car repairmen, consultants, credit bureaus, financial advisers, and flight attendants. All of these services require frequent interaction with customers. Many organizations have failed because their employees failed to meet customers' needs. So, the management needs to create an appropriate culture of consumer demand. Organizational behavior can help managers create a culture in which employees can identify the following qualities: kind-heartedness and attention, accessibility, knowledge, quick response to customer requests, willingness to act in a way that pleases customers regardless of their status.

Another term - **organizational climate** - is a general understanding of what an organization is in terms of management policies and practices. In some organizations, communication between managers and employees is open, while in others managers are distance and communication is limited.

How organizational culture and climate affect the members of the organization depends on how the



internal environment of the organization and the individual characteristics of the member "fit" each other. People who adapt well to culture and climate are more self-confident and experience satisfaction. Others may become victims of stress, aggressive, or even leave the organization.

An important aspect of diversity management is the protection of the principle of justice, the restriction of discrimination, the protection of equal human rights both in employment and in recruitment (Gigauri, Gulua & Mushkudiani, 2020).

When hiring, equal rights management eliminates discrimination. The decision to hire should not be discriminatory, unless its purpose is to exclude any group protected by law or to create obstacles to it. A set of measures needs to be developed to address the discrimination fact already happened or to eliminate the statistical imbalance in the workforce.

Discrimination during hiring in the United States is prohibited under the Civil Rights Act of 1964. This act prohibits discrimination in hiring, promotion, discharge, pay, fringe benefits, job training, classification, referral, and other aspects of employment, on the basis of race, color, religion, sex or national origin. Relevant decisions in the U.S. must be substantiated by both federal, state, provincial, and local laws, as well as case law.

In any type of organization, the foundation of an organizational behavior system is made up of individuals who have combined their efforts to create it (e.g., company owners) as well as the managers who run its operations. Diversity management is based on the organizational behavior philosophy (theoretical model) of the organization's management, which includes a set of assumptions and beliefs of its leaders and managers about the real state of the company, its manufacturing activity and possible ideal system.

Labour Code of Georgia provides that labour and pre-contractual relations shall prohibit any type of discrimination including when posting a job vacancy and at the selection stage due to race, skin colour, language, ethnicity or social status, nationality, origin, material status or position, place of residence, age, sex, sexual orientation, marital status, handicap, religious, public, political or other affiliation, including affiliation to trade unions, political or other opinions.

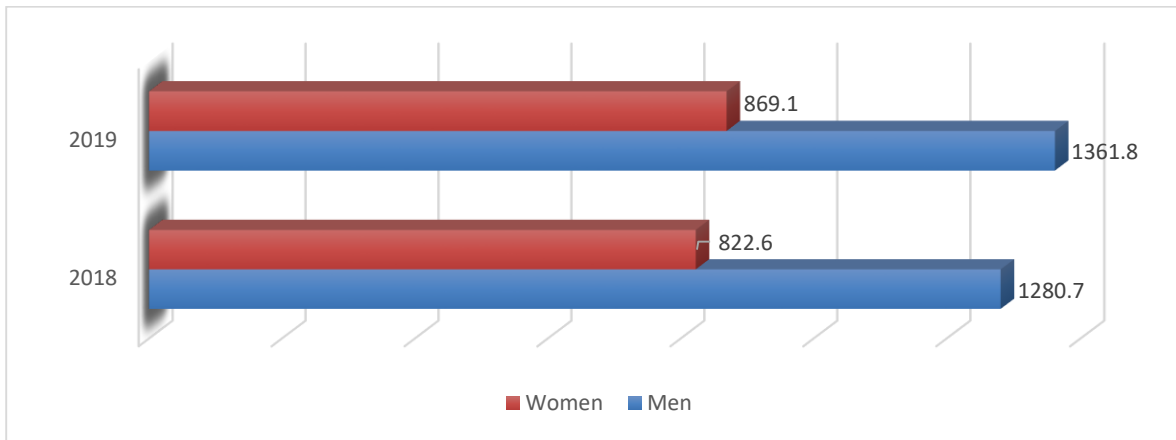
Guiding principles for the regulation of labour relations are such important documents as: Universal Declaration of Human Rights by the United Nations General Assembly, adopted on 10/12/1948, European Convention on Human Rights adopted by the Council of Europe on 4 November 1950; European Social Charter of 1961 (Council of Europe, 26/02/1961); United Nations Covenant on Civil and Political Rights



(ICCPR) of 16 December 1966, and International Covenant on Economic, Social and Cultural Rights (United Nations, 16/12/1966).

### Discussion

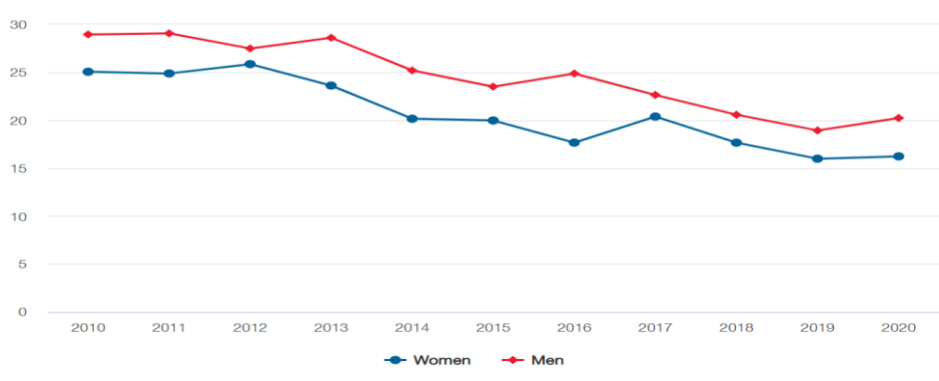
We took an interested in how equally women and men are treated in the workplace in Georgia. We studied their average nominal wages. A study of official data from the National Statistics Office of Georgia showed that the average salary of women lags behind that of men.



**Fig. 1.** Average Monthly Wages by Sex (Gel)

Source: National Statistics Office of Georgia

The average monthly wage for men is \$ 377 while the average wage for women is \$ 242.



**Fig. 2.** Unemployment Rate by Sex (%)

Source: National Statistics Office of Georgia

According to official statistics, the unemployment rate among women is lower than the unemployment



rate among men. One of the reasons for this reality is the low price of women's labor (figure 2).

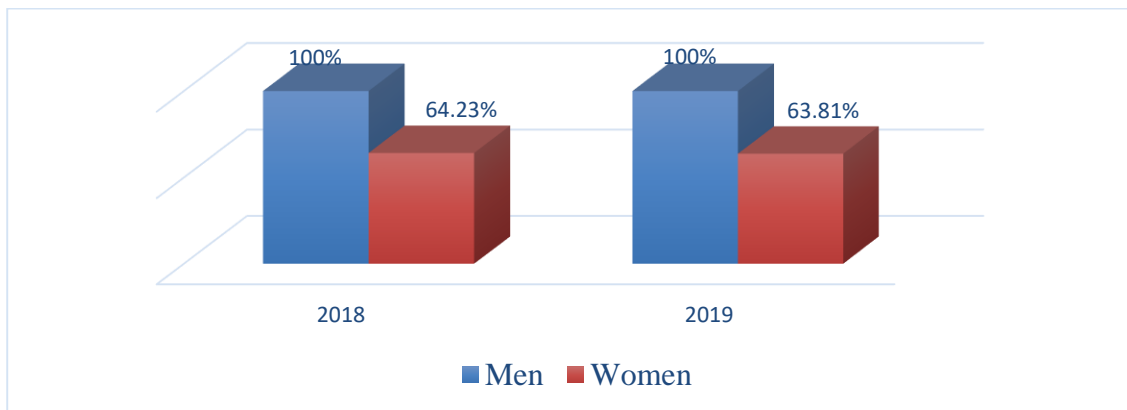
A detailed analysis of the labour force by sex shows that as of the fourth quarter of 2020, the population of women over the age of 15 exceeds the number of men, although the active labour force shows a larger number of men 62.04% and women 39.47%; The female labour force is 27.27% lower than the male active labour force. 60.53% of the female population is outside the labor force, that is 1.8 times more (972.2 thousand women) compared to the number of men outside the labor force (553.4 thousand men). Against the background of the above indicators, the fact that unemployment among women lags behind male unemployment is not a good indicator to consider the general condition as healthy (see Table 1).

**Table.1** Labour force Indicators by Sex

<b>Labour Force Indicators by Sex</b>						
Thousand persons	<b>4Q - 2018</b>		<b>4Q - 2019</b>		<b>4Q - 2020</b>	
	<b>Women</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>
Total 15 + population	1614.5	1408.9	1607.5	1424.4	1606.2	1405.1
Labour force (Active population), total	716.5	880.1	670.2	861.6	634.0	871.7
Employed	592.7	707.1	567.3	709.7	521.1	676.8
Hired	448.6	461.0	431.3	448.3	396.9	408.2
Self-employed	144.1	245.4	135.9	260.9	124.0	267.9
Not-identified worker	0.0	0.7	0.0	0.4	0.2	0.7
Unemployed	123.8	173.0	103.0	151.9	112.9	194.9
Population outside the labour force	898.0	528.8	937.2	562.8	972.2	533.4
Unemployment rate, percentage	17.3	19.7	15.4	17.6	17.8	22.4
Labour force participation rate (Economic activity rate), percentage	44.4	62.5	41.7	60.5	39.5	62.0
Employment rate, percentage	36.7	50.2	35.3	49.8	32.4	48.2

Source: National Statistics Office of Georgia

Also noteworthy is the fact that in 2019, the average wage of women was 63.81% of the average salary of men. (See Figure 3).



**Fig. 3.** Average Monthly Wages by Sex (%)

*Source: National Statistics Office of Georgia*

We have discussed the roles of four major theoretical models of organizational behavior, namely: autocratic, custodial, supportive, and collegial. The choice of organizational behavior model is determined by multiple factors. Organizational behaviour models are influenced by the priority philosophy, vision, mission, and goals of the organization and its managers. As well as external factors that also often lead to the application of a particular model.

Obviously, managers expect from their subordinates to deliver the best outcomes they can. One of the important functions of a manager is to determine the desired outcome in advance. However, it should always be kept in mind that in the pursuit of any purpose, the act of performing a particular task is accompanied by a behaviour characteristic of a particular individual that is related to many factors. It is the pre-determination and proper planning of these factors that increase the likelihood of achieving high performance quality. Performance-related behaviors for the manager include actions such as identifying problems, planning, organizing, and controlling employee performance and creating a motivating work environment for his/her employees.

In the late 1950s, Leon Festinger proposed the theory of Cognitive Dissonance, which explains the link between attitudes and behavior. Cognitive dissonance is any inconsistency that a person may see between two or more attitudes or attitudes and behaviors. Festinger argued that any form of inconsistency creates discomfort, which is why people try to reduce dissonance and hence discomfort. People will find a stable state where dissonance will be reduced to a minimum.

If employees do not work well or consistently, managers should investigate the problem. This requires constant monitoring of the relevant skills and abilities of the employees in order to reduce the likelihood of problems related to work performance. In addition, managers must be in constant search in order to



constantly improve the skills and qualifications of employees in the era of modern rapid changes and innovations through various planning measures. Here, the issue of responsibility of both the manager and the employee is already unequivocally important; It is essential how the manager takes action to eliminate problems and how adequately the employee understands the performance-related problem. Therefore, it is necessary to provide continuous retraining, continuous teaching of employees.

We are interested in a management course towards staff because, as a result of the decisions they make, people form a special attitude towards specific events and processes, based on their professionalism, values, and traditions.

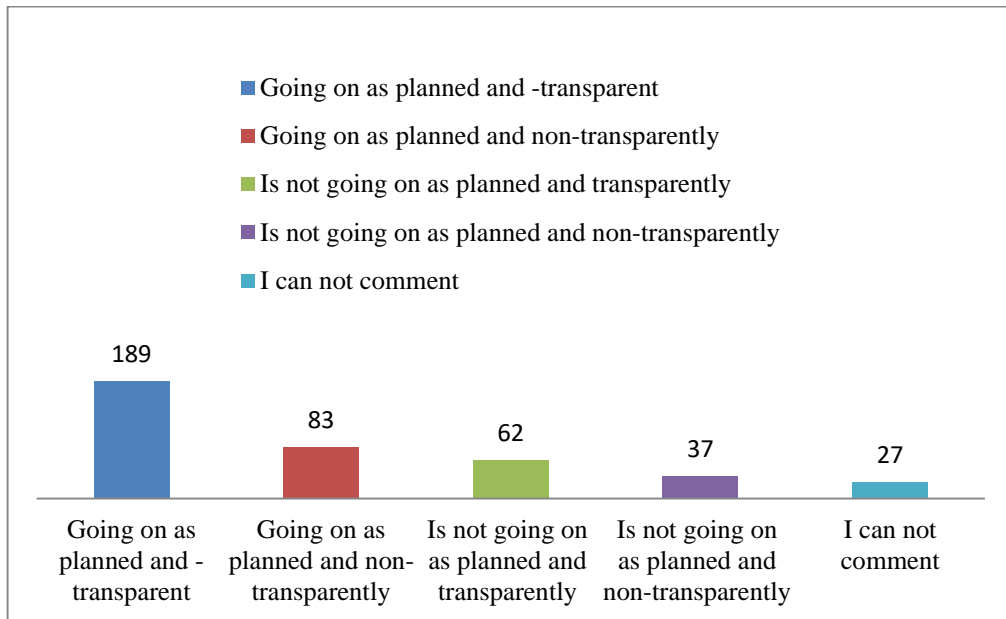
There is a cause-and-effect relationship between attitudes and behaviors. Therefore, attitude towards a particular action determines a particular behavior. At different times, in different countries, as a result of studies conducted by scientists, different conclusions have been made regarding the relationship between attitudes and behaviors. According to some studies, attitudes are not related to behavior or there is a weak connection between them. For example, if the facts of nepotism as a form of discrimination in the organization are revealed, eliminated and all employees are informed about it, of course, this will lead to staff activation, improvement of work performance and increase the effectiveness of measures to promote future career growth.

Studies carried out over the past twenty years (Lipovka, Islamgaleyev & Badjanova, 2021; Gechbaia, Tchilaia, Goletiani & Muskudiani, 2020; Paresashvili, Gurbanov, Gechbaia, Goletiani & Edzgeradze, 2020) have proven that emotion is associated with governing phenomena such as justice, creativity, innovation, organizational culture, and organizational integrity.

We took an interest in the attitude of employees in the study-subject organizations towards management transparency.

We received quite a variety of answers about the management process going on as planned and transparently. A fairly high percentage (47%) gave us a positive answer, however, at the same time we received quite a variety of answers regarding the governance course going on non-transparently and not as planned. which is probably due to ignorance or lack of transparency in the management process, or lack of interest in the final results, which is an unfavorable situation.

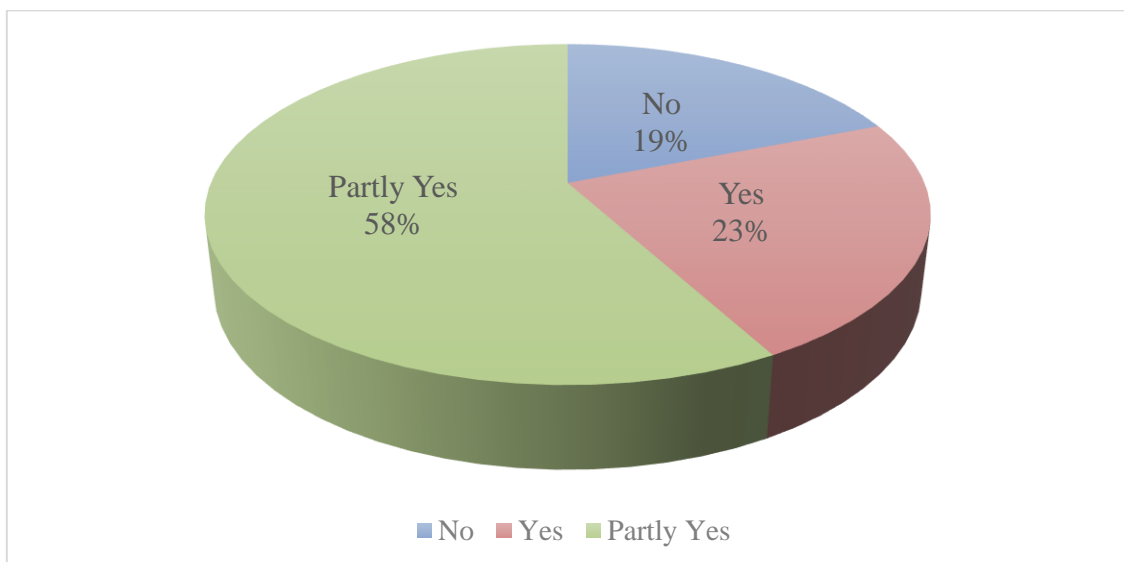
We became interested in studying the attitude of staff towards nepotism as a form of discrimination. It is unfortunate that in the condition of a course governed by justice and democratic principles, a fairly large proportion of respondents admitted that the use of systems to promote career growth takes place exactly in the condition of nepotism.



**Fig. 4.** Do you think that the management process is planned and transparent? (Emphasis is placed on 4 main functions of management: planning, organizing, motivation, control)

*Source: Own computations*

Only a small proportion of respondents - 19% denied the facts of nepotism, while 23% confidently confirm the implementation of continuous programs under the influence of nepotism, while the highest percentage - 58% partially believe that the facts of nepotism take place, i.e. neither deny nor confirm it.

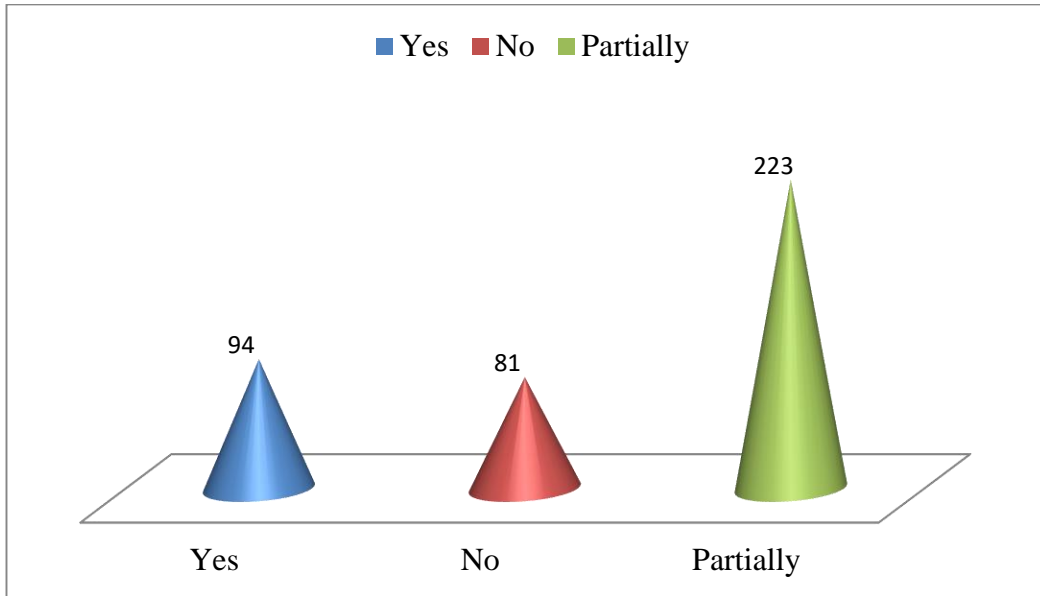


**Fig. 5.** Are career growth support systems used in the conditions of nepotism?

*Source: Own computations*

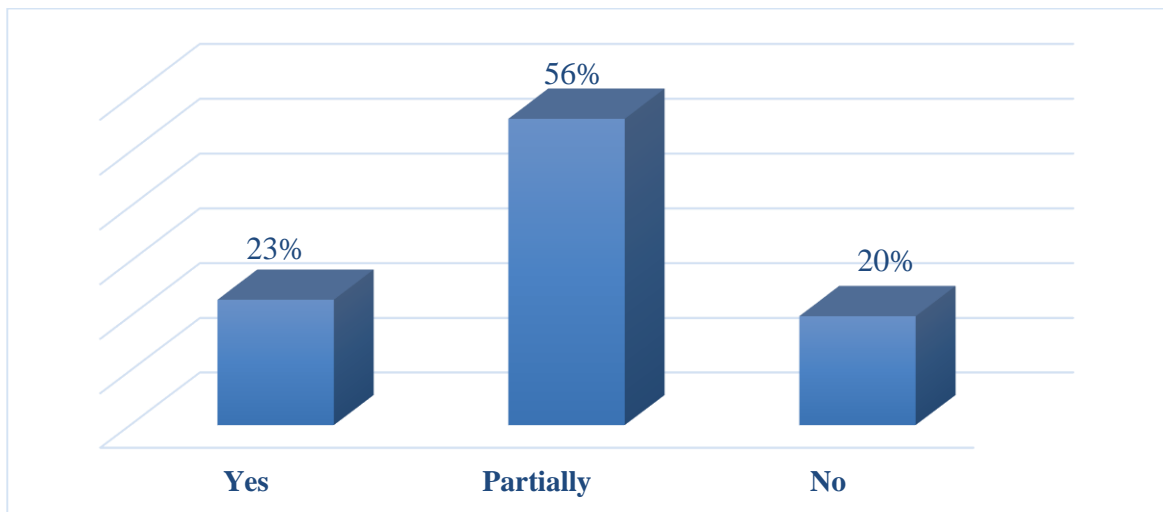


Therefore, we think that this is a rather remarkable circumstance, as it categorically contradicts the principles of justice and democratic governance. (Figure 5)



**Fig. 6.** Attitudes towards the manifestation of nepotism in the process of continuous training (retraining) of employees in organizations  
*Source: Own computations*

It was also interesting how the respondents assess the manifestation of nepotism in the process of continuous training (retraining) of employees in the organization.



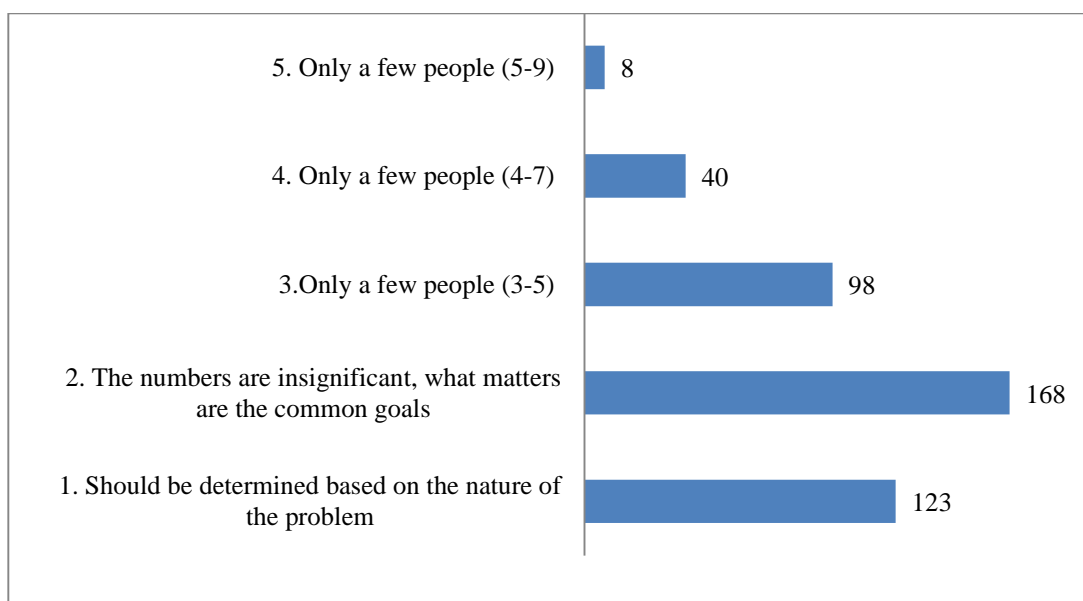
**Fig. 7.** Does the organization take care of an employee development?  
*Source: Own computations*

23% of respondents think that managers implement a policy of continuous training of employees, while



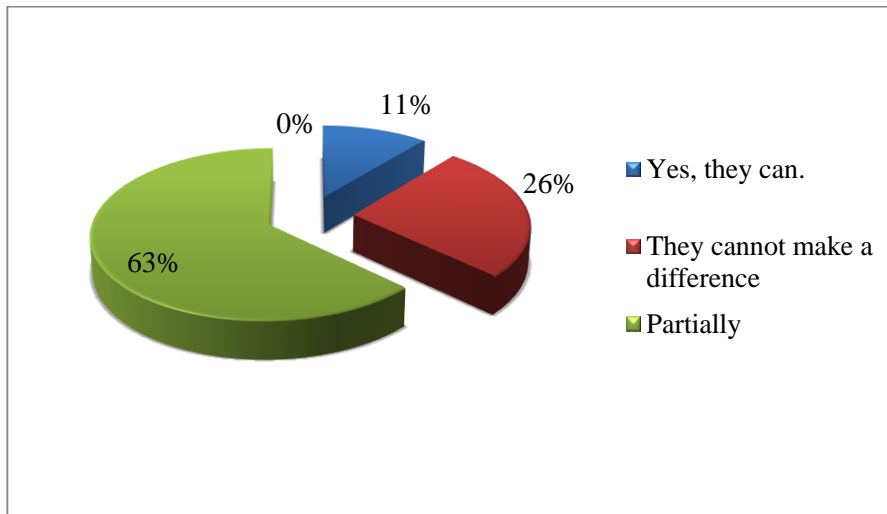
56% of respondents believe that specific measures for the professional development of employees are taken only in part, while 20% think that nothing is done in this regard in organizations. (See Figure 7).

It is interesting to see how important managers and subordinates perceive the importance of the number of team members. Here, too, one of the answers requires a special analysis: the highest percentage of respondents believe that the number of team members is insignificant, what matters is the common goals; a high percentage was of the opinion that the number of team members should be determined by the nature of the problem; here, of course, the complexity of the problem is important, but the organizational form is built on certain patterns that must be taken into account by managers.



**Fig. 8.** How many people should a team consist of? How many people should work on a particular problem?  
*Source: Own computations*

In connection to teams, it was important how staff perceived the importance of teams and groups in general, their impact on organizational behavior. The study found that 63% believe that groups and teams cannot change individual motives and attitudes to influence individual behavior in an organizational environment. Only 26% believe that teams can change the organizational climate.



**Fig. 9.** Influence of teams on individual motives and attitudes

*Source: Own computations*

## CONCLUSION

Given the modern challenges of managing an organization caused by the pandemic - the spread of Covid 19, the need to create an environment conducive to diversity in the workplace, accelerating the need for virtual organizations, flexible schedules, remote work, process digitization, and artificial intelligence have become apparent. This, together with solving the purely technical and technological issues, requires understanding and rejecting established stigmas, introducing an appropriate culture, raising awareness so that diversity brings not confrontation, confusion, and misunderstanding, but the best decision-making and synergistic effects based on a large selection of analytical variations.

Achieving employees' job satisfaction through high quality of work performed should become a key task for managers. In the work process, it is necessary to create an appropriate environment for innovation and creative views, which, as we see from the outcomes of the study, managers do not pay due attention to. It is unfortunate that leaders do not properly appreciate the importance of creating the desired environment in the work of the team and the organization as a whole. Workplace architecture and the work environment in general have a significant impact on team members' attitudes, including on the relationship and communication processes. Therefore, we need to keep in mind that modern and efficient workplace architecture (meaning physical environment) leads to improved communication between team members.

The development of state institutions, the growth of civil society activity, and especially the development of the judiciary system will play an important role in creating a diverse, non-discriminatory environment in Georgian organizations.



## Conflict of interests

The authors declare no conflict of interest.

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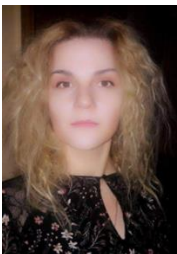
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## ANALYSIS OF THE INTERNATIONAL EXPERIENCE OF IMPLEMENTING BLOCKCHAIN TECHNOLOGY

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### ABSTRACT

**Background:** Today, blockchain technology is of interest in both the technology and business sectors. The information technology industry is developing very rapidly in our time, and new technologies appear so often that specialists often do not have time to react to their appearance. One of the striking examples of modern information technology potentially capable of changing the organization of effective economic management is the technology of distributed ledgers. Blockchain technology is “cross-cutting”, that is, one that can be applied in many areas of the economy, management, including state, municipal and social spheres. This paper determines by the provisions and the need to form the basis for the prospective assessment of the consequences of the implementation of blockchain technology, both nationally and internationally and collect information on the state of the issue, comparison of information for a transaction using blockchain technology in the supply chain of logistics, proposing the model implementation and future research and recommendations.

**Methods:** review of literature on the introduction of blockchain technology allows us to determine the current state of research issue, to note the lack of knowledge of blockchain technology and the use of a wide range of consumers. In this regard, it is necessary to conduct an analysis of the implementation of blockchain technology from the world experience.

**Results:** the orientation of the introduction of blockchain technology to the technological side of logistics reduces risks and significantly increases stability since it forms its practical orientation. The introduction of blockchain technology in the industry is beneficial for increasing the efficiency of the workflow, data storage, managing the supply of goods, reducing errors in the document flow and its duration, reducing the duration of the logistics cycle.

**Conclusions:** after reviewing the international experience in implementing the blockchain, it was concluded that entrepreneurs and authorities should constantly find new ways of methodological aspects of blockchain research and mechanism of applying technologies in the modern economic system. This experience shows that using blockchain technology in combination with other technologies can significantly reduce paperwork and growth of business activity, as well as reduce costs and increase efficiency. Also, based on the analysis results, we can formulate a conclusion that logistics is an industry in which the use of blockchain technology can solve the security problem in this area, as well as simplify and reduce the cost of transporting goods through smart contracts.

**Keywords:** Blockchain technology, supply chain management, logistics, transport logistics, information, supply tracking

**JEL classification:** M21, C89, C50, C60

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### INTRODUCTION

Today, many developed countries pay great attention to the development of the digital economy, in particular the blockchain technology, there by adopting new legislative acts and state programs, gradually introducing digitalization in all areas of the economy and creating infrastructure for the



development of the digital economy. The states take large-scale measures to develop the digital sector of the economy. Electronic document management systems are being introduced, electronic payments are being developed, and the regulatory framework in the field of e-Commerce is being improved. Digital economy platform is evolving on information technology platforms and is developing at an intensive rate, which makes it necessary to create new models of such platforms.

"Blockchain" technologies (distributed data registry technologies)," artificial intelligence", the use of the capabilities of supercomputers, as well as activities on crypto assets are one of the directions of development of the digital economy in many countries of the world. Blockchain technologies are gradually being implemented not only in many sectors of the economy, but also in the public administration system and other public relations<sup>1</sup>.

In modern transport logistics, when choosing optimal routes and transport, computer processing of raw data (orders, cargo parameters, vehicle fleet, etc.) is necessary. This is due to the constantly growing volumes of data on the state of management facilities. (Here in after referred to as the OU). Data about the shelter is sent to the control center in a "closed" form from satellites, and the manual processing of such a flow of information becomes time-consuming, which leads to a loss of efficiency of decisions made and an increase in the number of errors.

There are also studies of the features of the use of blockchain technology in the financial and banking sectors (Korchagin, 2016; Trufanov, 2017). The relevance of the analysis of the experience of implementing blockchain technology is determined by the above provisions and consists in the need to form a basis for a long-term assessment of the consequences of implementing this technology both at the national and international level.

## Literature Review

A possible solution to this problem in logistics systems may be the introduction of blockchain technology. A blockchain (English: Block chain or chain of blocks) is a continuous sequential chain of blocks (linked list) that contains information in accordance with certain rules. Most often, blockchain provides a decentralized and self-regulating data infrastructure in which all data and transactions are stored (Li, 2019). Due to the fact that all blocks in this technology are interconnected and in most cases are not subject to change, this technology can solve the security

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<sup>1</sup> Resolution of the President of the Republic of Uzbekistan Sh. M. Mirziyoyev dated July 3, 2018 No. PP-3832 "on measures for the development of the digital economy in the Republic of Uzbekistan". <https://lex.uz/ru/docs/3806048>



problem in logistics, namely, prevent the possibility of data modification and falsification by hackers.

Blockchain technology is a distributed resource technology, and its development has been recognized as a priority by the Uzbek government. There are also studies of the specifics of using blockchain technology in the financial and banking sectors (Osmani et al., 2020). Information security, including in the financial sector, has received considerable attention from researchers and scientists (Osmani et al., 2020). The user can point out specific problems, such as the technical problem of verifying a block of data, which is performed discretely, the problem of a small number of specialists in the use of this technology, and the lack of clear rules and norms for the transaction rule using blockchain technology.

The relevance of the analysis of the experience of implementing blockchain technology is determined by the following provisions and consists in the need to form a basis for a prospective assessment of the consequences of implementing this technology, both at the national and international level.

Tracking refers to the backward tracking of products, and tracking refers to the direct monitoring of the products. Few researchers have also mentioned that product traceability is mainly related to quality and safety assurance, but rarely related to business development and logistics improvement (Behnke & Janssen, 2020). However, the ability to combine high-quality product information with logistics information is constantly missing from the existing product supply chain infrastructure. By using sensors and IoT devices installed at every checkpoint (product value added) throughout the supply chain, this problem can be solved by constantly tracking both the quality information and the physical movement of the product. In the blockchain network, each product becomes an asset, and each IoT update serves as transactions performed with the asset. So, with a unique product identifier, any type of product can be tracked and tracked for quality assurance and logistics activities.

The reference literature provides data on the potential benefits of using technology to improve product identification, food safety and quality measurement, packaging, and software development. Another important reason for implementing technology is to attract customers and simplify their purchases.

Currently, 21 and a growing number of companies are using blockchain for asset management, identity management, and authentication of important documents such as passports, birth certificates, and Internet account logins, creating a digital identifier that combines decentralized



blockchains with identity management (Kuperberg, 2020). However, very few companies, such as Provenance, Block verify, QuickBooks, Everledger are focused on improving product provenance in a wide range of products such as fish, luxury items such as diamonds, expensive handbags and tracking the origin of pharmaceuticals.

IT-enabled product tracking system was also proposed which uses all the logistics information to improve supply planning and overall logistics operations. The current architecture, which was mainly used in modern product chains, as shown in figure 3-2, uses a centralized database that collects information about product characteristics only when it reaches the distributor and then the retailer. This is primarily applicable in a centralized retail supply chain, where retailers own their distribution network and logistics.

Information about the product at the initial stages from the processor to the farm is stored in the form of database repositories in the form of Excel sheets and printed copies. Optimizing data collection, data exchange, and data security is a prerequisite for creating an end-to-end tracking system, which can be either a conventional it system or a blockchain.

## **Methodology**

The review of literature on the introduction of blockchain technology allows us to determine the current state of research, to note the lack of knowledge of blockchain technology and the use of a wide range of consumers. In this regard, it is necessary to conduct an analysis of the implementation of blockchain technology from the world experience. Areas of application of blockchain technology in the modern economic system are constantly expanding. Major multinational corporations give priority to digital technologies and make capital investments in related developments, including the creation of a blockchain system and its implementation in the construction of the supply chain. To these companies include a manufacturer and supplier of hardware and software, "IBM", retail chain "Walmart" leader Online trading companies "Amazon", multinational manufacturing companies "Unilever" and "Nestlé", the freight forwarding company "UPS", etc.

Based on the review of articles of scientific publications published abroad, it is possible to determine the main directions of research in the field of blockchain:

- theoretical and methodological aspects of blockchain research; definition of the essence and mechanism of construction;
- advantages and risks of using blockchain, impact on the growth of business activity of business entities;



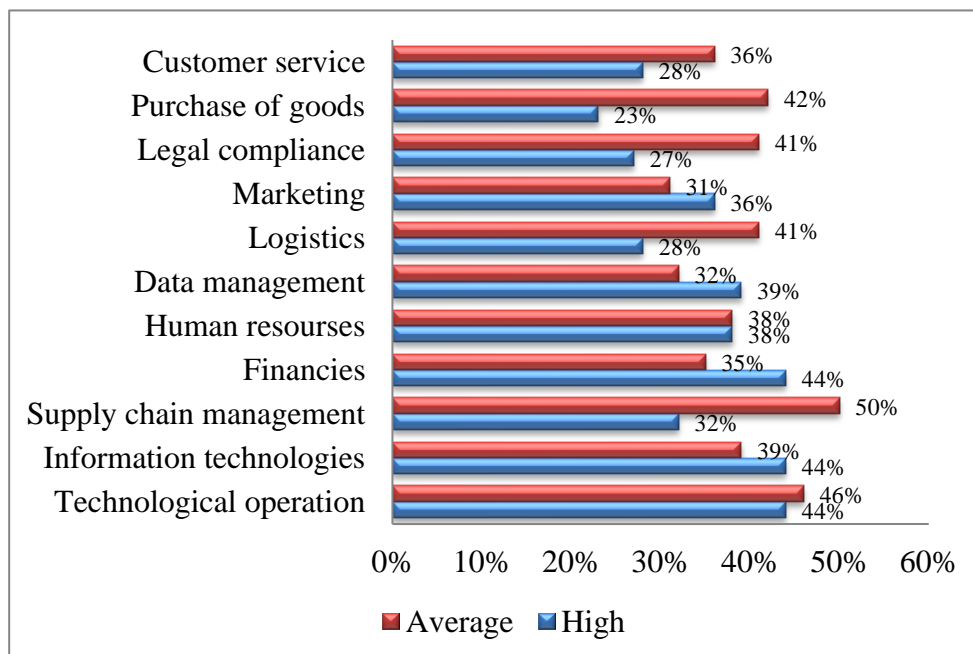
- blockchain as the basis for the development of smart contracts in business<sup>1</sup>;
- legal regulation of relations arising from the use of blockchain technology and cryptocurrency related to circulation (the issue of legal regulation of relations using the distributed registry system in logistics and supply chain management was not considered);
- the use of blockchain technology in the public and commercial sphere, including in certain industries and spheres of activity.

### Analysis and Results

Initially, the blockchain among entrepreneurs was associated only with the financial sector, in particular with the circulation of cryptocurrencies. Currently, there is a steady growth in the number of branches of technology being studied.

The blockchain allows you to track all the movements of goods and fix all links in the supply chain, as well as provide irrefutable evidence about the country of origin and logistics processing of goods.

Figure 1 shows the degree of influence of blockchain technology on individual functional areas of the organization<sup>2</sup>.



**Fig. 1.** Assessment of the surveyed foreign companies that have implemented blockchain technology, %

*Source: Created by author*

<sup>1</sup> Retail: Opening the Doors to Blockchain. URL: <https://www.cognizant.com/whitepapers/retail-opening-the-doors-to-blockchain-codex2879.pdf>.

<sup>2</sup> Chainstep. Blockchain in use. URL: <https://www.chainstep.com/use-cases/?lang=en>.



Walmart, the world's leading retailer, was one of the first to use blockchain technology in trade. In 2016, it launched a pilot project to use blockchain technology in the supply of pork from China. In addition to Walmart itself, Tsinghua University in Beijing and IBM Corporation participated in the implementation of the project in order to improve the tracking system for goods transported from China.

The next example of using blockchain technology by a walmart trading company is the delivery of mangoes from Mexico. In 2018, the international retail chain Carrefour, based in France, announced the expansion of the use of blockchain technology. Buyers are offered the opportunity to track the entire chain of movement of livestock products and vegetables. After reading the QR code placed on the goods, the consumer can find out all the details of the origin of goods, their transportation and storage using a smartphone. Having analyzed the practice of using blockchain in various areas of activity based on the data presented on the CHAINSTEP website (Nir Kshetri, 2018), we can conclude that it is supply chain management and logistics that are the areas of activity in which the blockchain has the greatest potential for development. Thus, as of March 10, 2018, out of 453 cases of implementation of blockchain technology, 61 projects accounted for supply chain management, transport, logistics (while the largest number of projects still belongs to the Finance sector -116) (Korchagin, S. (Ed.) 2016).

Currently, a blockchain trading platform for the global logistics industry, developed by IBM in collaboration with the world leader in container shipping, the Danish company Maersk, is being developed and tested to create a digital trading platform based on open standards, designed to exploit the global logistics ecosystem.

As follows from table 1, blockchain technology in the field of logistics can be used both in individual domestic markets and internationally. Blockchain in supply chain management is more often used in the following main functional areas: documenting logistics operations, concluding contracts and ensuring compliance with other multilateral agreements, tracking cargo, financial support for the logistics process, and so on.in 2017 - early 2018, pilot projects were launched to use blockchain technology in the field of nutrition of such food groups as fruits and vegetables, animal products, fish and seafood.

**Table 1.** Examples of blockchain applications in supply chain management

THE PROJECT	BRIEF CHARACTERISTICS OF
"EverLadger" <a href="https://www.everledger.io">https://www.everledger.io</a>	Tracking the origin of diamonds. The company was



	<p>founded in April 2015.          L. Kemp (Kemp Leanne)</p>
<p>Service Ripe.io – tracking deliveries of agricultural products ("from bed to plate») <a href="http://www.ripe.io">http://www.ripe.io</a></p>	<p>The system registers the ripeness, humidity and temperature of products. The farmer can monitor what happens to his product on the way, adjust the collection and delivery system based on the data obtained, and most importantly - always know in what condition his customer received the products.</p>
<p>Provenance - tracking food supplies to stores and restaurants  <a href="http://www.provenance.org">http://www.provenance.org</a></p>	<p>Currently, more than 200 retailers and manufacturers in the food and beverage industry in the UK use the "Provenance" software.          Users have the ability to track the movement of food items from the moment of production to hit the shelves.          You can not only check the quality of the product, but also find out whether it is legally produced.</p>
<p>IMMLA - international multi modallogistics application <a href="http://immla.io">http://immla.io</a></p>	<p>a Logistics solution that combines instant processing of applications and conclusion of contracts for multi-modal transportation based on the best price principle.          It provides interaction between the cargo owner and the carrier at all stages of the cargo transportation process based on the Ethereum blockchain and smart contracts.          The founders are " SB Solutions "(an IT company with a focus on logistics), as well as the leaders of the logistics industry "Global Transport Investments" and "Hellmann Worldwide Logistics".</p>

*Source: Created by author (Korchagin, S. (Ed.) 2016)*

### **Proposed Implementation Model**

Implementation work should be carried out in accordance with the guidelines, regulatory and methodological documents. The purpose of the implementation is to develop software for the formation of a single information field based on blockchain technology. We recommend highlighting the following stages of blockchain implementation in a modern industrial enterprise:

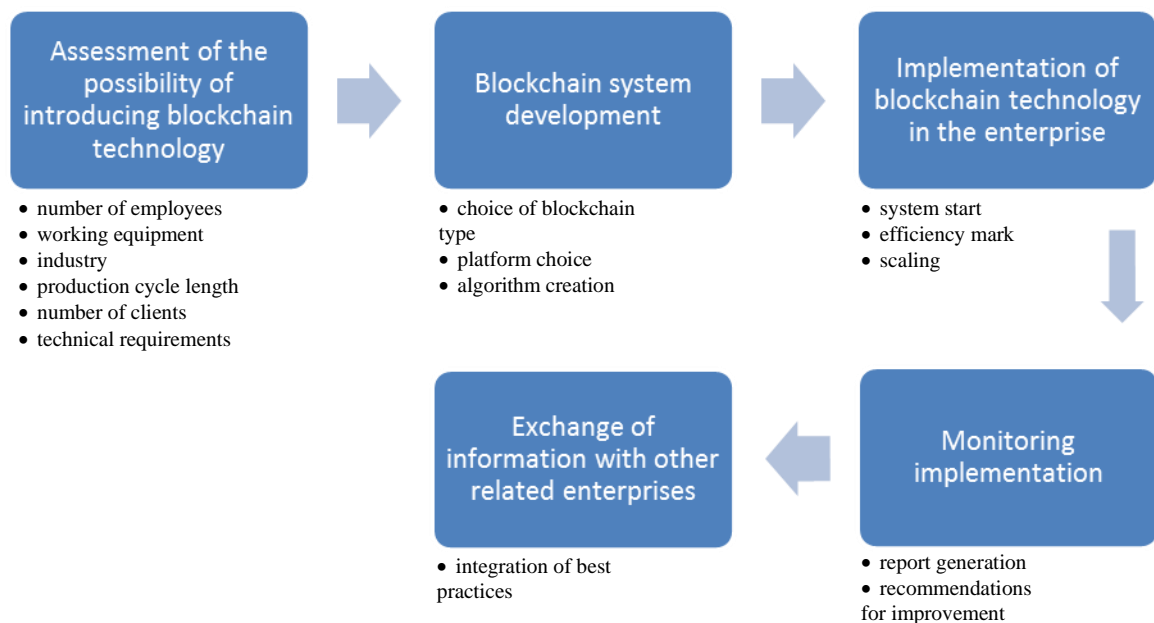
- assessment of the possibility of introducing blockchain into an enterprise. At this stage, the following information about the enterprise is required - the number of employees, turnover, industry, length of the production cycle, the number of customers, availability of warranty periods and service conditions (Abdullayev, Saidahrer & Ayupov, 2020). Based on this data, programmers process the received data and calculate the timing implementation of blockchain technologies in the company, its cost, economic efficiency and risks. Based on the received blockchain analysis, the enterprise decides on the need to implement the technology;

- development of a blockchain system for an enterprise. At this stage, the enterprise has two options. First, blockchain algorithms are currently developed for each industry and enterprise size

that can be used for adaptation at the level of a particular organization. The availability of a ready-made core of the program allows you to reduce implementation costs by up to 70% and speed up the process of implementing blockchain technologies. The second is the adaptation of the algorithm to the order of the enterprise. In this case, the enterprise provides all the information about the required blockchain platform administration system, which further adapts the existing templates for the individual enterprise. The choice of the required option is carried out by the management of the enterprise based on the interests of the management, the specifics of the work and the level of confidentiality of information;

- implementation of a blockchain system in an industrial enterprise. At this stage, the system is launched and its effectiveness is assessed. It is being finalized within the framework of the identified shortcomings or improvement opportunities;

- monitoring the implementation of blockchain technology. An enterprise implementing distributed ledger technology can generate a monthly report on the progress of the blockchain system implementation. Based on this report, the system formulates recommendations for improving the blockchain system and their economic justification;



**Fig. 2.** A model for the implementation of blockchain technology in an industrial enterprise

*Source: Created by author*

- participation of an enterprise in the blockchain community through the generalization of implementation results and exchange of information with partner companies within their industry or



related fields of activity. Exchange of information allows you to popularize the company as a technology leader and attract new customers, partners or investors. The information collection function allows you to integrate best practices in the blockchain field and make the enterprise one of the leaders in the field of distributed ledger technologies. Figure 9 shows a model for implementing blockchain technology in an industrial enterprise.

This implementation approach allows at the early stages of implementation to assess the prospects of blockchain for an enterprise, or to diversify risks by implementing blockchain as part of a separate business process.

### **Future Research and Recommendations**

Blockchain technology positively affects the solution of key problems of supply chain management, including the reliability, stability and flexibility of the supply chain (Paliwal et al., 2020).

The following advantages of using blockchain in supply chain management are proposed:

- reducing logistics costs across the entire supply chain;
- reducing systemic risks in operational activities (Nigmatulin, Krasnova, Lavrinovich, 2016., p. 31);
- improving product safety, reducing losses in the process of delivery and storage of goods;
- ensuring transparency and reliability of information about manufacturers (suppliers) of goods and the process of their distribution;
- ensuring complete anonymity of all transactions in case of implementation of closed solutions (Trufanov, 2017, p. 50);
- achieving a high degree of flexibility in the supply chain;
- providing unlimited storage of permits and accompanying digital documents, including certificates, licenses, confirmation of excise payments, etc. (Nigmatulin, Krasnova, Lavrinovich, 2016, p. 13);
- increase the speed of customs clearance of goods in international trade;
- ensure closer relationships and coordination between all supply chain participants;
- ensuring consumer rights by providing complete and irrefutable information about the origin of goods obtained in a retail chain;
- increasing opportunities for fair trade and green logistics development;
- reducing the number of diseases associated with the use of low-quality, contaminated food;



- applying a dynamic pricing strategy in the service sector that can be built on the basis of real data, for example, taking into account actual delivery speeds, climatic conditions, and so on.

Based on the review of the state of the issue, literature, and comparison, it is possible to determine the main directions for future research in the field of blockchain:

- theoretical and methodological aspects of blockchain research, definition of the essence and mechanism of construction;
- advantages and risks of using blockchain, impact on the growth of business activity of business entities;
- blockchain as the basis for the development of smart contracts in business (Strembitskaya, Babayan, 2017, pp. 136-147);
- legal regulation of relations arising from the use of blockchain technology and cryptocurrency related to circulation (the issue of legal regulation of relations using the distributed registry system in logistics and supply chain management was not considered);
- the use of blockchain technology in the public and commercial sphere, including in certain industries and spheres of activity.

## CONCLUSION

Blockchain in supply chain management is a technology that allows transactions between peer-to-peer networks while managing material, information, financial, and service flows. Over the past two years, key blockchain technology projects have been implemented in the field of food supplies (vegetables and fruits, animal products, fish, and seafood).

After reviewing the international experience in implementing the blockchain, it was concluded that entrepreneurs and authorities should constantly find new ways of methodological aspects of blockchain research and mechanism of applying technologies in the modern economic system. This experience shows that using blockchain technology in combination with other technologies can significantly reduce paperwork and growth of business activity, as well as reduce costs and increase efficiency. Also, based on the analysis results, we can formulate a conclusion that logistics is an industry in which the use of blockchain technology can solve the security problem in this area, as well as simplify and reduce the cost of transporting goods through smart contracts. The orientation of the implementation of blockchain technology to the technological side of logistics reduces risks and significantly increases stability, since it forms its practical orientation. The introduction of blockchain technology in the industry is beneficial for improving the efficiency of the workflow,



storing data, managing the supply of goods, reducing errors in document flow and its duration, reducing the duration of the logistics cycle.

Summing up in the near future, the scope of effective research of blockchain technology in supply chain management will be expanded. Blockchain technology will cover both the supply of food and non-food products; first of all, it concerns goods for which there is a high proportion of counterfeit and substandard products.

### Conflict of interests

The authors declare no conflict of interest.

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## MULTI-CRITERIA TECHNOLOGIES FOR MANAGERIAL DECISIONS SYSTEM ANALYSIS

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### ABSTRACT

The article is devoted to the systems analysis technologies application in the sphere of managerial decisions selection in economic growth based performance criteria using different optimality principles. The modern practice of public administration faces the problem of choosing a solution based on a few or multiple criteria in conditions of economic growth. The scientific problem of new systems analysis technologies workability that make it possible to justify managerial decisions using several optimality principles is actualized. The developing a methodology for substantiating managerial decisions of public authorities and local self-government, which could be used by both bodies, is grounded. Conditions of uncertainty in economic growth arise due to the influence of uncontrollable factors on the effectiveness of managerial decisions is noted. The use of the principles of optimism, pessimism, guaranteed results, guaranteed losses, minimax risk (Savage principle) for the systematic justification of managerial decisions is proposed. The use of multi-criteria models in economic growth enables to reasonably choose the optimal solution is grounded. Multi-criteria optimization as a system analysis technology for the most effective choice of project under uncertainty is used. An example of optimal choice of local authorities for the project of public-private partnership in the sphere of investment in infrastructure development as an important area of economic growth is given.

**Keywords:** principle, optimality, multi-criteria, managerial decision, economic growth.

**JEL classification:** M37, Z32, Z39

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### INTRODUCTION

The development of information technology and communications significantly increases competition in all forms of manifestation, which is a common factor of uncertainty in economic conditions. General trends in the uncertainty of the economic environment are exacerbated in Ukraine due to the incompleteness of market transformation processes in the economy, instability in politics and social life. At all hierarchical levels of the economic system, these processes create an additional complication of economic growth. Therefore, developing a methodology for substantiating managerial decisions (MD) of public authorities and local self-government in the face of economic growth, which could be used by both public administration and local self-government bodies, becomes very relevant for economic science in Ukraine.



This problem becomes especially relevant in the context of decentralization of authority, with the transition to the principles of public administration, when significant financial resources for investment purposes are transferred to local communities. Thus, according to a survey conducted by the National Agency of Ukraine for Civil Service within the Council Europe project, about 70% of respondents from local communities in all regions claimed that the priority of local governments was infrastructure investment<sup>1</sup>. In particular, in 2020, UAH 73 billion was allocated for road repair, maintenance and reconstruction alone (Akhmedova, 2014). Investment projects in social infrastructure do not have a direct economic effect, but can stimulate the economic growth of each country. We support the opinion of the World Bank experts, who note that the effect of such projects arises as a result of synergistic and multiplicative manifestations of different impacts on the economy (economic, social, environmental and other effects)<sup>2</sup>. So, the modern practice of public administration faces the problem of choosing a solution based on a few or multiple criteria in conditions of economic growth. This requires the scientific development of new systems analysis technologies that make it possible to justify MD using several optimality principles.

## **2. Brief literature review**

The theoretical basis taking into account the uncertainty in management decisions developed in the writings of the founders of this scientific direction F. Knight (1921) and G. Simon (1976). Due to L. Zade's research, uncertainty is no longer regarded as an external obstacle to managerial decision-making, but is interpreted as its integral characteristic of the functioning of economic systems (Baturshin et al, 2007; Vinokurov, 2020; Kolesnichenko, 2020; Shmygol et al, 2020; Menshikov et al, 2020; Komarova et al, 2021; Koval et al, 2020).

In order to evaluate the effectiveness of managerial decisions that are made at the stage of substantiation of the feasibility of their implementation, it is proposed to use deterministic and probabilistic models in the economic literature (Trunina et al, 2018; Hlibko, 2020; Radukanov, 2017). The use of a deterministic approach implies that the expectations should have a clear interpretation and accurate estimate. This approach leads to significant limitations of its application in the conditions of uncertainty and unpredictability of the environment (Yankovyi et al, 2019).

### **2.1. The purpose of the paper**

Most widely, the scientific literature highlights one of the possible ways of solving this problem, which is to improve the methodology for predicting and using probabilistic models. However, the use of these models is complicated by the uncertainty of the factors that characterize the environment. In practice, this leads to a

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<sup>1</sup>Advertising and sales promotion. The essence of advertising and its main features, <http://megalektsii.ru/s56216t1.html>.

<sup>2</sup> National Agency of Ukraine for Civil Service, 2020. Center.gov.ua, URL: <https://bit.ly/3kwZKWK>



decrease in the reliability of probability models. Given the shortcomings of deterministic and probabilistic models, the authors propose to adapt the theory of game theory to select optimal MD.

### 2.1.1. Results and discussion

When deciding on the feasibility of implementing MD, it is necessary to take into account environmental factors that are uncontrollable, and factors that can be influenced by the state and economic entities, i.e. controllable. Controllable factors have financial, logistical and organizational content. It is assumed that the adjustment of the controllable factors is intended to maximize the effectiveness of the MD in the context of economic growth.

Denote the possible variants of MD that are aimed at achieving the optimum result by  $X_j$ . For local communities, for example, such MD can be highway reconstruction projects, capital reconstruction of schools, and building sewage treatment plants. These MDs are alternative. A set of these alternatives will look like:

$$X = \{X_j\}, j = \overline{1, m} \quad (1)$$

Then the area of choice of optimal MD is determined by the influence of uncontrollable factors. Unmanaged factors ( $Y_i$ ) include macroeconomic economic conditions, foreign economic factors, social, environmental, etc. We denote the set of uncontrollable factors by:

$$Y = \{Y_i\}, i = \overline{1, n} \quad (2)$$

The performance evaluation of the MD is performed using criterion (E). Performance criteria can be, in our example, indicators of economic, social, environmental performance. According to Radukanov (2014), efficiency has different manifestations and on this basis are distinguished: resource efficiency, cost efficiency, market efficiency, social efficiency, etc. In this case, the performance can be estimated using absolute or relative indicators (efficiency). Absolute metrics are defined as the difference between the result and the cost of resources to achieve that result. Absolute metrics were named effect. A prerequisite for their application is the uniformity of units of outcome and cost. Relative metrics are determined by dividing the result by the amount of resources expended to achieve that result. Relative metrics can be used for both the same and different units of numerator and denominator to achieve this result. Therefore, it is advisable to use them in systematic analysis of different MDs. Therefore, the criterion of performance is the relative indicator - efficiency.

To evaluate the performance of MD, economic efficiency indicators are most often used, which allow them to carry out a comparative analysis, namely: internal rate of return, coefficient of profit-cost, payback period of investments. In quantitative terms, the impact of each of the uncontrolled factors ( $Y_i$ ) on the



performance of any MD ( $X_j$ ) will be different. The dependence of the metric used as a performance criterion on alternatives and uncontrollable factors is:

$$E = E(X, Y) \tag{3}$$

Provided that alternatives to X and Y factors are discrete, an efficiency matrix is formed:

$$\|E(X, Y)\| \tag{4}$$

Matrix 4 allows us to determine the best variant of MD ( $x^0 \in X$ ) using one of the principles of optimality. Such principles may be: maximum efficiency (optimistic principle), minimum efficiency (pessimistic principle), guaranteed result principle or others. Several principles can be used to systematically analyze MD's performance and select the best solution:

$$G = \{g_l\}, l = \overline{1, L} \tag{5}$$

Each of the principles of optimality generally leads to different conclusions about the effectiveness of MD. The following two situations are possible:

1. The results of using each principle of optimality lead to the choice of the same MD,

$$x_1(q_1) = x_2(q_2) = \dots = x_n(q_n) \tag{6}$$

2. The optimal MDs that are determined when applying different principles are different, that is:

$$x_1(q_1) \neq x_2(q_2) \neq \dots \neq x_n(q_n) \tag{7}$$

In situations where the optimal MDs by all principles do not overlap, there is a problem of determining the final MDs, which is adopted for implementation on the basis of systematic analysis of the multi-criterion efficiency model.

Consider an example of choosing the optimal MD based on an assessment of the cost-effectiveness of public-private partnership (PPP) projects under uncertainty using several optimality principles. Suppose that four PPP projects ( $x_1, x_2, x_3, x_4$ ) have been submitted for the competition, for which the basic principles of optimality are applied: optimism; pessimism; guaranteed result; guaranteed losses; Savage principle. Creating a model for choosing the optimal MD based on game theory should start with building an efficiency matrix. The most time-consuming and responsible step in applying game models to determine optimal MD is to economically evaluate the metrics on which the efficiency matrix is built, because inaccurate estimates in the efficiency matrix cannot be offset by any computational methods and usually lead to an erroneous result.



When constructing the efficiency matrix, it is assumed that uncontrollable factors ( $y_1 \dots y_n$ ) affect the efficiency of MD simultaneously, but in each  $y_i$  the influence of the corresponding uncontrolled factor is preferred. The predominant influence of factor 1 ( $y_1$ ) on the PPP project efficiency by number 1 ( $x_1$ ) is estimated by the efficiency of  $E_{11}$ , the predominant influence of factor 2 ( $y_2$ ) on the efficiency of project 1 ( $x_1$ ) by the magnitude of  $E_{12}$ , etc. (Table 1).

**Table 1.** Efficiency matrix

x	y				
	$y_1$	$y_2$	...	$y_n$	
$x_1$	$E_{11}$	$E_{12}$	...	$E_{1n}$	
$x_2$	$E_{21}$	$E_{22}$	...	$E_{2n}$	
...	...	...	...	...	
$x_m$	$E_{m1}$	$E_{m2}$	...	$E_{mn}$	

On the basis of the principle of optimism, the upper limit of efficiency of PPP projects is determined in the conditions of uncertainty of the environment, which allows choosing the optimal project (Table 2):

$$E_{opt} = \max \max E(x, y) \tag{8}$$

$$x \in X, y \in Y$$

**Table 2.** Optimism principle efficiency matrix

x	y					max E
	$y_1$	$y_2$	...	$y_n$		
$x_1$	$E_{11}$	$E_{12}$	...	$E_{1n}$	$E_{1max}$	
$x_2$	$E_{21}$	$E_{22}$	...	$E_{2n}$	$E_{2max}$	
...	...	...	...	...	...	
$x_m$	$E_{m1}$	$E_{m2}$	...	$E_{mn}$	$E_{mmax}$	

The principle of pessimism implies that uncontrollable factors act in the most unfavorable way and those that are controllable are misused. This principle sets the bottom line for the effectiveness of PPP projects that are selected for implementation under the influence of uncontrollable factors. The principle of pessimism is written in the form (Table 3):

$$E_{pes} = \min \min E(x, y) \tag{9}$$

$$x \in X, y \in Y$$



**Table 3.** Pessimism principle efficiency matrix

x	y				min E
	y <sub>1</sub>	y <sub>2</sub>	...	y <sub>n</sub>	
x <sub>1</sub>	E <sub>11</sub>	E <sub>12</sub>	...	E <sub>1n</sub>	E <sub>1min</sub>
x <sub>2</sub>	E <sub>21</sub>	E <sub>22</sub>	...	E <sub>2n</sub>	E <sub>2min</sub>
...	...	...	...	...	...
x <sub>m</sub>	E <sub>m1</sub>	E <sub>m2</sub>	...	E <sub>mn</sub>	E <sub>mmin</sub>

The Guaranteed Result principle shows what kind of guaranteed result we can get in the presence of uncontrollable factors that act in the most unfavorable way. This principle is written in the form (Table 4):

$$E_g = \min \min E_g(x, y) \tag{10}$$

$x \in X, y \in Y$

**Table 4.** The guaranteed result principle efficiency matrix

x	y				min E <sub>g</sub>
	y <sub>1</sub>	y <sub>2</sub>	...	y <sub>n</sub>	
x <sub>1</sub>	E <sub>11</sub>	E <sub>12</sub>	...	E <sub>1n</sub>	E <sub>1g min</sub>
x <sub>2</sub>	E <sub>21</sub>	E <sub>22</sub>	...	E <sub>2n</sub>	E <sub>2g min</sub>
...	...	...	...	...	...
x <sub>m</sub>	E <sub>m1</sub>	E <sub>m2</sub>	...	E <sub>mn</sub>	E <sub>mg min</sub>

The Savage principle is used to determine the minimum amount of damage (actual or potential) caused by the influence of uncontrollable factors (Table 5):

$$E_s = \min \max Y(x, y') \tag{11}$$

$x \in X, y \in Y$

**Table 5.** Savage principle damage matrix

x	y				max Y
	y <sub>1</sub>	y <sub>2</sub>	...	y <sub>n</sub>	
x <sub>1</sub>	E <sub>11</sub>	E <sub>12</sub>	...	E <sub>1m</sub>	Y <sub>1max</sub>
x <sub>2</sub>	E <sub>21</sub>	E <sub>22</sub>	...	E <sub>2m</sub>	Y <sub>2max</sub>
...	...	...	...	...	...
X <sub>n</sub>	E <sub>n1</sub>	E <sub>n2</sub>	...	E <sub>nm</sub>	E <sub>nmax</sub>

where  $Y(x, y') = \max E(x, y') - E(x, y')$  – is the amount of damage caused by the choice of a suboptimal PPP project;



$y'$  – is a fixed value of  $y$ .

The principle of guaranteed losses determines the deviation (loss) of efficiency caused by the action of uncontrollable factors. This principle is formulated as follows (Table 6):

**Table 6.** Guaranteed loss principle damage matrix

x	y				maxP
	$y_1$	$y_2$	...	$y_n$	
$x_1$	$P_{11}$	$P_{12}$	...	$P_{1n}$	$P_{1max}$
$x_2$	$P_{21}$	$P_{22}$	...	$P_{2n}$	$P_{2max}$
...	...	...	...	...	...
$x_n$	$P_{n1}$	$P_{n2}$	...	$P_{nn}$	$P_{nmax}$

$$P_g = \min_{x'} \max_y P(x', y) \tag{12}$$

$$x \in X, y \in Y$$

$$P(x', y) = E(x', y)_{max} - E(x, y), \tag{13}$$

where  $x'$  – is a fixed value of  $x$ .

To test the multi-criteria MD system analysis technology based on the use of game models, let's consider our example. Suppose there are four public-private partnership (PPP) projects ( $x_1, x_2, x_3, x_4$ ) proposed for competition by state or local government:  $x_1$  – highway reconstruction,  $x_2$  – capital reconstruction of schools, stadium construction, building sewage treatment plants. Effectiveness of these projects depends largely on the effects of uncontrollable factors:  $y_1$  - macroeconomic - population savings;  $y_2$  - foreign trade - the ratio of prices for domestic and similar imported goods;  $y_3$  - social - changes in demand in the sectoral markets (due to changes in the preferences of the population). In order to fill the efficiency matrices, the factors ( $y_1, y_2, y_3, y_4$ ) value must be quantified and reduced to a comparative form. This reduction is performed via standardization and transforming all indicators into a score using a single scale. In our example, the scale has a range from 1 to 15 points. An example of such a methodology is the UN recommendations for determining the human development index<sup>1</sup>. The calculation results are given in  $y$  (Table 7).

We determine the optimal PPP according to the criterion of economic efficiency according to the above principles of optimality:

1. on the principle of optimism:

$$x_{opt}^0 = x_2, E_{onn} = 12 \text{ units};$$

<sup>1</sup> UNDP, United Nations Development Programme, 2020. URL: <https://bit.ly/3pvBWpM>



**Table 7.** PPP project efficiency matrix

x	y			maxE	minE
	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>		
x <sub>1</sub>	7	9	5	9	5
x <sub>2</sub>	2	7	12	12	2
x <sub>3</sub>	3	8	4	8	3
x <sub>4</sub>	1	10	6	10	1

We determine the optimal PPP according to the criterion of economic efficiency according to the above principles of optimality:

2. on the principle of optimism:

$$x_{opt}^0 = x_2, E_{omn} = 12 \text{ units};$$

on the principle of pessimism:

$$x_{opt}^0 = x_4, E_{nec} = 1 \text{ units};$$

on the principle of guaranteed result:

$$x_z^0 = x_1, E_z = 5 \text{ units}.$$

Let us find the optimal solution using the Savage principle. To do this, we construct a loss matrix (Table 8) based on a basic efficiency matrix (Table 7). Select the maximum efficiency of PPP projects from the table 7 under the influence of factor 1 (y<sub>1</sub>). This corresponds to 7 units (E<sub>11</sub>) for the 1st project (x<sub>1</sub>).

Determine the value of (E<sub>11</sub>) (7 units) as a fixed value for factor u<sub>1</sub> and calculate the magnitude of the losses of all projects, compared to the maximum value. The results of the calculations are given in the 1st column (y<sub>1</sub>) of the Table 8. For different factors y<sub>2</sub> and y<sub>3</sub> we will carry out similar operations and calculations.

**Table 8.** PPP project loss matrix

x	y			maxY
	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>	
x <sub>1</sub>	0	1	7	7
x <sub>2</sub>	5	3	0	5
x <sub>3</sub>	4	2	8	8
x <sub>4</sub>	6	0	6	6



According to the Savage principle, the PPP project that corresponds to the minimum amount of losses will be optimal:  $x_c^0 = x_2, Y_e = 5$  units.

To apply the principle of guaranteed losses, we construct a loss matrix by choosing from the table 7 the maximum value of PPP projects efficiency under the influence of factors.

For project  $x_1$  – it is 9 units ( $E_{12}$ ) under the influence of factor  $y_2$ . We are able to calculate the magnitude of the losses of all projects, compared to the maximum value. The results of the calculations are given in the 1st row ( $x_1$ ) of the Table 9.

**Table 9.** The loss matrix for the PPP projects

x	y			maxΠ
	$y_1$	$y_2$	$y_3$	
$x_1$	2	0	4	4
$x_2$	10	5	0	10
$x_3$	5	0	4	5
$x_4$	9	0	4	9

Perform the same operations and calculations for projects  $x_2, x_3, x_4$ .

Let's determine the optimal PPP project based on the principle of guaranteed losses:  $x_{zn}^0 = x_1, \Pi_e = 4$  units.

The results of the application of different principles are given in Table 10.

In our example, a systematic analysis of the effectiveness of PPP projects submitted to the competition shows that projects № 1 and № 2 should be preferred to select the optimal MD.

**Table 10.** Optimal PPP projects identified with application of different principles of optimality

Principle	Optimal projects
Optimism principle	$x_2$
Pessimism principle	$x_4$
Guaranteed result principle	$x_1$
Savage principle	$x_2$
Guaranteed loss principle	$x_1$

Thus, according to different optimality principles, MD is formed that project № 1 (highway reconstruction) is optimal for implementation on two principles: guaranteed result and guaranteed losses; project № 2 (capital reconstruction of schools) is also based on two principles: optimism (maximum efficiency) and Savage principle (minimax risk). This is also confirmed by the results of a comparative analysis of the cost-effectiveness of the selected projects, since both projects № 1 and № 2 have the same,



and substantially greater than the other, control over the allocation of efficiency. At the same time, the analysis of the degree of risk of these projects shows that the distribution of efficiency under the influence of uncontrollable factors in project № 2 has a range of fluctuations of efficiency of 2 - 12 units and in project № 1 there are only 5-9 units, so there are certain reasons to conclude that project № 1 is less risky. Thus, the use of multi-criteria models in economic growth enables, for example local authorities, to reasonably choose the optimal solution.

## CONCLUSION

Approbation of models of multi-criteria optimization on an example of a choice of managerial decisions in the context of economic growth gives the grounds to draw the following conclusions:

1. the use of these models increases the validity of decisions, because it is based on qualitative (substantive) and quantitative assessments of socio-economic efficiency of alternative capital investments in infrastructure development;
2. models of multi-criteria optimization allow comparative analysis of qualitatively (substantively) different indicators of alternative capital investments;
3. these models make it possible to take into account and compare any factors influencing managerial decisions in economic growth;
4. the degree of validity, as in the use of any other methods of assessing socio-economic efficiency, depends on the reliability of measuring quantitative parameters and the quality of expert opinions.

## Conflict of interests

The authors declare no conflict of interest.

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## METHODOLOGICAL APPROACHES TO ASSESSING THE SOCIAL RESPONSIBILITY LEVEL IN THE FIELD OF SUPPLY CHAIN MANAGEMENT

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### ABSTRACT

The article reveals the essence of such a sphere of entrepreneurial activity as Supply Chain Management. An important aspect of supply management is the implementation of the concept of Corporate Social Responsibility (CSR), which is an integral feature of modern civilized business. The aim of the article is to develop a methodological approach to assessing the level of social responsibility of Supply Chain Management' company. Based on the previously proposed approaches to assessing the social responsibility of a company, the author proposes an adapted approach to assessing the social responsibility of supply chains' company. The integral index for SR SCM level assessment combines the following indicator blocks: a responsible producer of goods and services; a responsible business partner, a responsible participant in social and labour relations; a responsible participant in socio-economic and political relations with the state. The article proposes a methodology for assessing socially responsible Supply Chain Management based on the calculation of the integral index, which combines the following indicator blocks: the index of compliance of the supplied raw and other materials, components and accessory parts to the environmental standards; environmental sustainability index for supply chain's transport support; index of products (services) compliance with international quality standards. Assessment of the companies' corporate responsibility and their supply chains from their policies' perspective is possible, if it is based on the implementation of the Key Performance Indicators system, which will allow controlling the level of achievement for corporate responsibility objectives within the framework of the company's activities.

**Keywords:** corporate social responsibility (CSR), supply chain management, integral index of the social responsibility of supply chains.

**JEL classification:** M14, M21, C89

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### INTRODUCTION

Assessment of the social responsibility level in the field of supply chain management (SCM) is an important component in the further implementation of the corporate social responsibility concept, its genesis, and development of individual applied aspects, thus ensuring the companies' balanced development in different industries.



The building industry (and in particular, the production and installation of heating, ventilation and air conditioning systems) has a number of features that affect the implementation of socially responsible SCM practices. They are connected, first of all, with the fact that in the process of selecting suppliers and their products the emphasis is on the environmental sustainability of raw materials and technologies, and their compliance with the international quality standards. An important aspect is that there are virtually absent the wholesale consumers such as chains of building supermarkets and hypermarkets in the sale of manufacturers' products. Product sales are targeted to specific consumers.

Supply chain management is an important area in the implementation of the CSR concept in modern business. Building an end-to-end supply chain based on the principles of sustainable development is an urgent problem of modern business theory and practice.

### **Materials and Methods**

The theoretical origins of the CSR concept in the system of entrepreneurial activity are laid down in the works of M. Allais, F. Burley, G. Bowen, M. Weber, P. Drucker, B. Carloff, E. Carnegie, F. Kotler (Kotler & Lee, 2005), G. Minz, and other scientists. Classics are G. Bowen, K. Davis, A. Carroll, laid down in the 60 years of the twentieth century, the basic concepts of the theory of social responsibility. At present, the concept of CSR is further developed in the economic science and practice of many countries, these problems are developed by R. Akkerman, U. Buffet (Buffet, 2008), Y. Blagov, E. Grishnova, L. Laptev (Laptev, 2004), etc. Supply Chain Management (SCM) was seen as an important part of the overall management of the enterprise. A key SCM' role in increasing the effectiveness of its functioning have proved S.Chopra (Chopra, Meindl, 2016), Ivanov and Sokolov (2010), M.Christopher (Christopher, 2005), T.Harrison (Harrison, 2001), etc.

An increasing adherence to the principles of social responsibility is the global trend of business development in modern conditions. And although most companies directly declare goals and policies aimed at corporate sustainability, only 20% of companies are focused on building the entire network with a high level of corporate social responsibility (Cecere, 2015). At the same time, an important scientific problem is the assessment of the level of social responsibility in the field of SCM (Chen & Gong, 2013), (Kumar & Wagle, 2014), (Managing Green Supply Chains: Best Practices and Long-term Solutions, 2012), (Prashant Kumar & Subhash Wagle, 2014), (Wannenwetsch, 2005), which has not been enough researched in the literature.



The aim of the article is to develop a methodological approach to assessing the level of social responsibility of SCM company. Based on the previously proposed approaches to assessing the social responsibility of a company, the author proposes an adapted approach to assessing the social responsibility of supply chains' company.

## Results and Discussion

An important scientific problem is the corporate social responsibility assessment. The works of many foreign and national scientists are devoted to this subject, and in addition, the international standards of social responsibility have been developed. All existing approaches to assessing the social responsibility at the micro-level can be classified according to the following criteria:

- 1) depending on the indicators used, the approaches are based on qualitative and quantitative estimates;
- 2) depending on the approach used as the basis for the calculations such as index, rating, etc.;
- 3) depending on the assessment purpose (for compiling social reporting), the most common standards for preparing social reporting) are the following: The Communication on Progress (COP); Global Reporting Initiative (GRI); Account Ability (report on AA1000 standards)), for managerial solutions, for strategic and tactical planning, etc.

However, it's necessary to note that despite rather significant scientific potential in the field of social responsibility, the problems of assessing the social responsibility level on certain fields of the company's activity still have considerable scope for theoretical, practical, methodological, and research works. Virtually, no methods have been developed for assessing the social responsibility in the field of supply chain management.

The methodology for assessing the companies' voluntary social responsibility is based on the CSR issues disclosed in the companies' non-financial reporting and rating in the field of social responsibility. The assessment is made based on the following components:

- 1) general and economic information about the company;
- 2) expenses for solving social issues of the company's employees and their families (as a percentage of revenue): medical care and maintaining a healthy lifestyle; family social support and employee benefits; assistance in housing provision; support for working veterans; training and personnel work costs; measures on labour protection and environmental safety;
- 3) expenses for social programs outside the company (as a percentage of revenue): expenses for the implementation of social programs in the framework of bilateral agreements between the company and the government; costs on social programs outside the company.

A methodological approach to assessing the social responsibility of building companies was proposed by V.V. Smachilo and V.A. Balyaba (Smachilo & Balyaba, 2015). They proposed a list of estimated indicators for building companies' social responsibility with 47 indicators. These indicators are divided into 7 blocks



with consideration of their specific features - "Organizational Management", "Human Rights", "Labour Practices", "Environment", "Responsible Business Practices", "Problems Related to Consumers", "Participation in the Communities' Life and Development". The methodology is based on involving of experts and rating, which is caused by the need to justify the estimated indicators and evaluate their values, which are multidirectional and diverse. The rating scale is from 1 (worst score) to 10 (best score). The best score can be characterized by both its high value and low, depending on the indicator type. The methodology for assessing the building companies' social responsibility includes the following steps:

1) substantiation of the list of indicators, by which the building company's social responsibility will be assessed in accordance with ISO 26000 based on a survey of scientists and the experts, who were the heads of the building companies' structural divisions;

2) calculation of the actual indicators' value;

3) verification of the indicators compliance with the established criteria and assessment. According to the audit results, the experts give scores from 1 to 10 for each indicator; then, the total score for all estimated indicators is evaluated (the maximum score is 470 points, of which 120 are qualitative indicators, 350 are quantitative indicators);

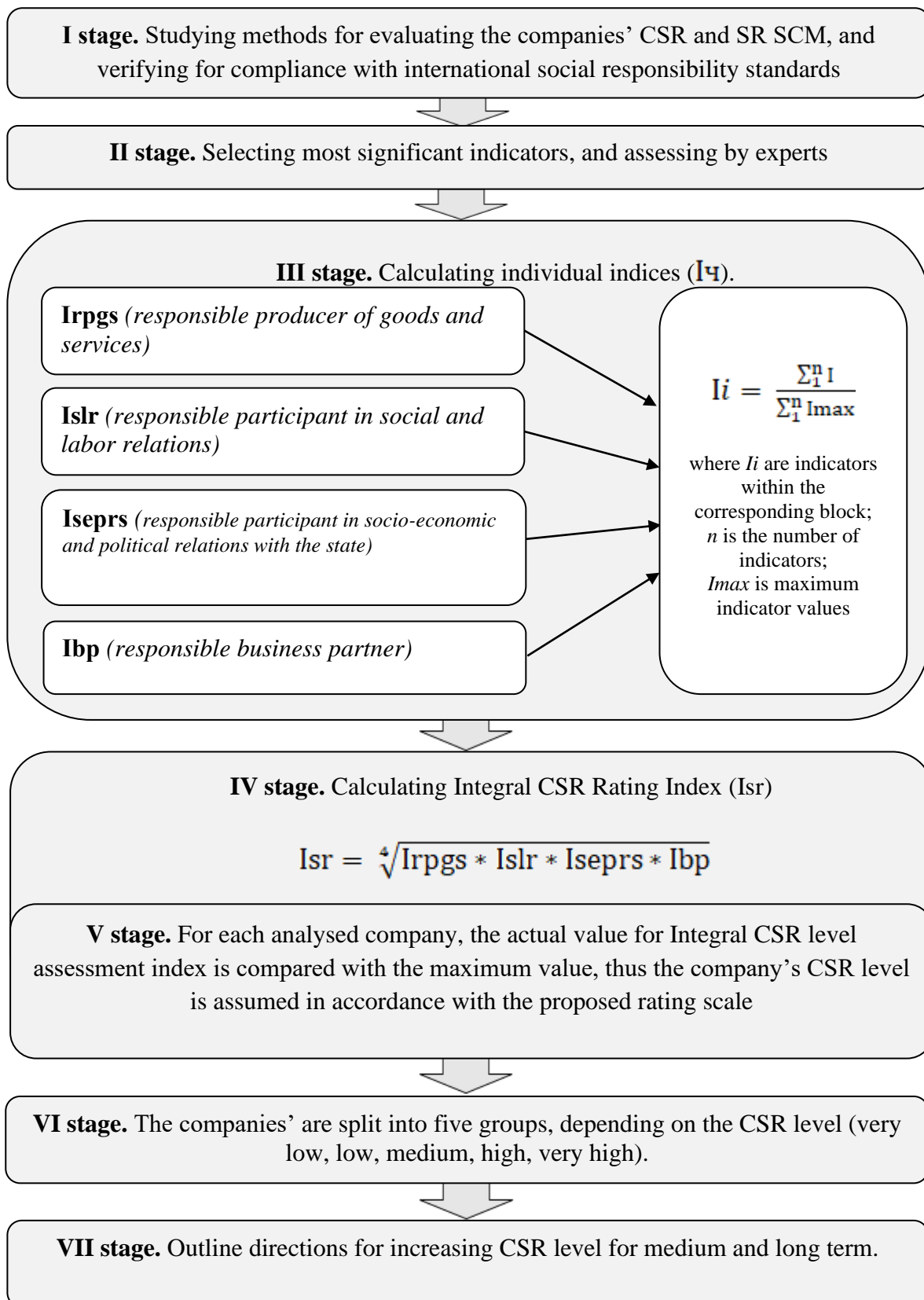
4) calculating the actual value of the company's social responsibility in points, and comparing it with the maximum possible value;

5) generating the company's social responsibility areas;

6) locating the area where the company is at present in order to establish the real situation for the company's social responsibility further development, to develop the necessary program of events.

Basing on the assessment findings, V.V. Smachilo and V.A. Balyaba (Smachilo & Balyaba, 2015) recommend distinguishing the following: an area of company's social irresponsibility, a point of minimum social responsibility, an area of the company's social responsibility of a middle level, an area of the company's high level social responsibility. Thus, if the company scored less than 120 points in the assessment, and it is considered as socially irresponsible. A socially irresponsible company is a business entity that does not meet the minimum requirements of legislative and regulatory provisions on social responsibility. The remaining points are evenly distributed between the medium and high levels of social responsibility, which allows generating the appropriate areas and ranges for social responsibility.

The Supply Chain Management is closely related to marketing, especially in terms of assessing the company's social responsibility. Social responsibility in the company's activities is implemented as a result of the relevant policies. However, providing the information about the company's commitment to social responsibility principles to consumers, stakeholders, and the general public is a marketing function.



**Fig. 1.** Theoretical and methodological approach to assessing the corporate social responsibility level in building corporations

Source: Developed by the author.



Therefore, when developing the instruments for assessing social responsibility of such a company’s activity important component as supply chain management, we will inevitably include the marketing elements.

Thus, taking into account the specific features of the socially responsible marketing and the approaches to its assessment existing in the scientific literature, we propose to define the social responsibility level in supply chain management basing on an expert survey of both scientists and practitioners working in the enterprises under study. There are 7 stages of assessment of the companies’ CSR level (see Fig. 1).

I Stage. The study of methods for evaluating the companies’ CSR and SR SCM, and verifying for compliance with the international standards of social responsibility

Based on the results of this study, a general list of indicators is formed, and then it is submitted for consideration by experts.

II Stage. Selection of the most significant indicators, and their evaluation by independent experts. We developed a system of indicators for calculating the integral index for assessing the company's CSR level basing on a survey of experts who are specialists in the supply chain management and marketing, corporate social responsibility, and leading scientists working in this area (Table 1).

**Table 1.** The system of indicators for calculating integral index for evaluating the CSR level

<b>Indicator block name</b>	<b>Assessment Aspects / Indicators</b>
<b>Responsible goods and services manufacturer</b>	Offering safe products to the market;
	refusal to use environmentally harmful substances in production;
	Energy efficiency;
	Certification of products according to international standards;
	using environmentally friendly, quality, and cheap packaging.
<b>Responsible Business Partner</b>	Providing reliable information about the products or services;
	Building Responsible Supply Chains
	using safe technologies for transportation and product marketing;
	Using Ethical Advertising
	Transparent pricing
	Arranging long-term relationships with consumers and suppliers.
<b>Responsible</b>	Ensuring decent pay and working conditions;



<b>participant in social and labour relations</b>	Transparency of information regarding the company’s personnel strategy for all personnel;
	completeness and timeliness of wage payments;
	Implementation of social projects for the company’s personnel.
<b>Responsible participant in socio-economic and political relations with the state</b>	Compliance with applicable laws
	Timely and transparent tax payment;
	subject to fair competition rules;
	Participation in state social projects implementation.

*Source: Developed by the author.*

III Stage. Calculation of particular indices. Basing on an expert survey, the individual indices (Ii) are calculated for the following groups of indicators:

responsible producer of goods and services (Irpgs), responsible participant in social and labour relations (Islr), responsible participant in socio-economic and political relations with the state (Iseprs), responsible business partner (ibp) according to the following formula:

$$I_i = \frac{\sum_1^n I_i}{\sum_1^n I_{i\max}} \quad (1)$$

where I are indicators within the corresponding block; n is the number of indicators; I<sub>max</sub> is maximum indicator values.

IV Stage. Calculation of the integral CSR level evaluation index (Isr), which is defined as the geometric mean of the particular indices:

$$Isr = \sqrt[4]{Irpgs * Islr * Iseprs * Ibp} \quad (2)$$

V Stage. For each company under study, the actual value of the CSR level assessment integral index is compared with the maximum value and the company’s CSR level is assumed in accordance with our proposed rating scale (Table 2).

VI Stage. The companies’ sorting into 5 groups, depending on the CSR level (very low, low, medium, high, very high).

Such sorting of companies into groups will make it possible to better compare them, find common problems in their activities and the ways to solve them, improve conceptual approaches to the further



implementation of the corporate social responsibility concept both in the companies and individual enterprises.

**Table 2.** Rating scale for CSR level

<b>SR SCM level</b>	<b>Isr SCM value</b>
<b>very low</b>	from 0 to 0.2
<b>low</b>	from 0.2 to 0.4
<b>medium</b>	from 0.4 to 0.6
<b>high</b>	from 0.6 to 0.8
<b>very high</b>	from 0.8 to 1.0

*Source: Developed by the author.*

VII stage. Identifying the directions for increasing CSR level in the medium and long term.

Raising the CSR level implies the implementation of such important aspects as: effective interaction with external stakeholders, ensuring socially responsible SCM, setting stable business relationships and ensuring the quality of products and their components at all supply chain stages.

Socially responsible SCM for the company, first of all, means forming relations with business partners on the principles of compliance with agreements, professional performance standards, and financial responsibility. Such a company should conduct its activities in accordance with applicable law and comply with the concluded agreements. The company has got fame on the national or international market, as the company’s owners care about its image, the financial statements are transparent, the company’s charity is not ostentatious, and the company’s positive reputation is stable (Elkington, 1998).

The world business practice has gained extensive experience in evaluating companies’ CSR. Moreover, the general trend is spreading the CSR international standards in open systems that allow each company to voluntarily publish its reports on social responsibility. These international CSR standards include: ISO 26000:2010 (Guidance on social Responsibility)<sup>1</sup>, OHSAS 18001 (Occupational Health and Safety Management Systems)<sup>2</sup>, RG Sustainability Reporting Guidelines G 3.1<sup>3</sup>, SA8000 (Social Accountability International 8000)<sup>4</sup>, GRI (Global Reporting Initiative) (Standarts GRI), etc.

5 blocks of standards are presented in the international standards system GRI (Global Reporting Initiative): GRI 102 - information about an organization, GRI 103 - information about the management

<sup>1</sup> [https://isotc.iso.org/livelink/livelink/fetch/2000/2122/830949/3934883/3935837/3974907/N172\\_ISO\\_DIS\\_26000\\_\\_E\\_.pdf?nodeid=8385467&vernum=0](https://isotc.iso.org/livelink/livelink/fetch/2000/2122/830949/3934883/3935837/3974907/N172_ISO_DIS_26000__E_.pdf?nodeid=8385467&vernum=0)

<sup>2</sup> <http://www.assistem.kiev.ua/doc/ohsas18001-2007.pdf>

<sup>3</sup> <https://www.assistem.kiev.ua/doc/ohsas18001-2007.pdf>

<sup>4</sup> <https://www.daikin.com/csr/information/influence/hfc32.html>



system, GRI 200 – economic information, GRI 300 – environmental information, GRI 400 - social standards (Standarts GRI). The GRI 308 group of standards addresses the suppliers' environmental performance in the supply chain. In accordance with them, it is recommended that the companies when preparing a report shall provide the following information about their approach to the supply management environmental assessment:

- the systems used to screen new suppliers using environmental criteria and relevant criteria for environmental sustainability used to screen new suppliers;
- the processes used (such as the necessary prudence) in order to identify and evaluate the actual and potential negative environmental impacts in the supply chain;
- how the organization determines and prioritizes the suppliers' selection in the context of environmental impact assessments;
- the actions taken to eliminate significant actual and identified potential negative environmental impacts in the supply chain, and whether any actions have been taken to prevent, mitigate, or correct these impacts;
- how the measures in contracts with suppliers facilitate the prevention, mitigation and correction of significant actual and potential negative environmental impacts, including goals and tasks, are established;
- whether the suppliers are motivated and rewarded to prevent, mitigate, and recover significant actual and potential negative impacts on the environment;
- the practice of evaluating and auditing suppliers, their products, and services using environmental criteria;
- a list of types, systems, scope, frequency, assessment intensity, and certified audit, including the supply chains;
- the systems for assessing potential negative consequences of suspending or terminating relations with a supplier, if one's activity environmental impacts and harm-reduction strategy do not comply with the ecological responsibility standards.

Accordingly, the following indicators can be used:

308-1 – part of new suppliers (in percent's) who were verified as users of environmental criteria.

308-2 – the information regarding the company's awareness of significant actual and potential negative environmental impacts in the supply chain:

- a) the number of suppliers evaluated for environmental impacts;
- b) the number of suppliers identified as those having significant actual and potentially negative environmental impacts;
- c) the significant actual and potential negative environmental impacts identified in the supply chain;



d) the part of suppliers (in percent's) identified as those that provide significant actual and potentially negative impacts on the environment, and with which the improvements as a result of the assessment were agreed;

e) the part of suppliers (in percent's) identified as those that provide significant actual and potentially negative impacts on the environment, with which the relationships were suspended or terminated as a result of the assessment, and the reasons why (Standarts GRI).

Based on generalization of existing approaches, we proposed to evaluate socially responsible SCM (SR SCM) within the company's general system of social responsibility assessment basing on the following system of performance indicators within the established supply chains:

1) *Irm* - the index that shows compliance of the supplied raw materials and other materials, components and accessory parts with the environmental standards;

2) *Iet* - environmental sustainability index of transport support for the supply chain;

3) *Irisq* - index of product compliance with the international quality standards.

The index of compliance for the supplied raw materials is calculated as the share of raw materials and other materials, components and accessory parts with certificates of compliance with the environmental standards in the total amount of raw materials and components used:

$$Irm = \frac{RM}{WM} \quad (3)$$

where *RM* is the amount of raw materials and other materials, components and accessory parts complying with environmental (or international standards);

*WM* - the total amount of the supplied raw materials and other materials, components, and accessory parts.

The environmental sustainability index of transport support for the supply chain is defined by the number of transport and logistics companies that meet high environmental standards in the overall supply chain relative to the total number of transport and logistics companies:

$$Iet = \frac{TR}{WT} \quad (4)$$

where *TR* is the number of transport companies that meet environmental or international standards;

*WT* is the total number of vehicles included in the supply chain.

The index of the product's compliance with international quality standards that indicates the quantity of products that meets international quality standards in the total amount of products:



$$Irisq = \frac{PR}{WP} \quad (5)$$

where  $PR$  is the number of products that meet international standards (describing, if available, international quality certificates; certificates of compliance with international environmental standards, and other types of voluntary certification for products or business processes for a supplier company);

$WP$  is the total product output.

As a result, we have developed a theoretical and methodological approach to assessing the level of SR SCM in companies, which can be applied in many industries. The general approach to assessing CSR is to calculate the integral index by the forms of manifestation social responsibility in the context of the following groups of indicators: a responsible producer of goods and services, a responsible participant in social and labour relations; a responsible participant in socio-economic and political relations with the state; a responsible business partner. Thus, SCM is an important area of social responsibility implementation, which requires specific approaches to its assessment. We proposed assessing the level of social responsibility in this area using a fractional index calculated basing on sub-indexes within the formed supply chains' mechanism: *the index of compliance of raw materials and other materials, components and accessory parts to environmental standards; environmental sustainability index for the supply chain's transport support; index of compliance for products (services) with international quality standards.*

In general, an integrated assessment of the companies' social responsibility is possible only if there is provided reliable statistical information on them, which requires developing new standards for generation of analytical data, reduced to one form. In our opinion, the assessment of companies' corporate responsibility and their supply chains from their policy perspective is even more important. Based on this, we consider it appropriate to introduce the Key Performance Indicators system, which can be adapted by each company to its own characteristics and specific goals. The assessment of the company's internal environment based on four main criteria: finance, customers, staff, and internal business processes, seems to be the most reliable.

## CONCLUSION

Thus, the adoption of the social responsibility concept should be the main idea that permeates the company's main objectives - from strategy formation to decision making within the framework of the companies' operational activities. The system of indicators we proposed in the study for calculating the integral index for SR SCM level assessment combines the following indicator blocks: a responsible producer of goods and services; a responsible business partner, a responsible participant in social and labour relations; a responsible participant in socio-economic and political relations with the state. Methodological approaches to assessing SR SCM are proposed basing on a fractional index that is integrating the following indices: the index of compliance of the supplied raw and other materials, components and accessory parts to the environmental



standards; environmental sustainability index for supply chain's transport support; index of products (services) compliance with international quality standards.

An integrated assessment of the social responsibility for several companies is possible only if reliable statistical information on them is available. Assessment of the companies' corporate responsibility and their supply chains from their policies' perspective is possible, if it is based on the implementation of the Key Performance Indicators system, which will allow controlling the level of achievement for corporate responsibility objectives within the framework of the company's activities.

### Conflict of interests

The authors declare no conflict of interest.

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## EMPLOYEES DISCRIMINATION ISSUES BASED ON THE STATISTICAL ANALYSIS USING SPSS (Case of Georgia, Republic of)

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### ABSTRACT

Every single person has right to work in a free and fair environment. But unfortunately, there are some cases all over the world which show that the situation in the workplaces is opposite. There are different types of discrimination of employees. That is why it is so much important to study the basis of all the types discrimination, find out the crucial problems in each one and work out the relevant solutions to facilitate the victims or potential victims for the improvement of their working conditions.

The paper studies employee's discrimination issues in the organization. For leading the management of the organization efficiently, it is of great importance to conduct a detailed study of the ongoing processes, analyze the results of the study and develop measures based on the information received as a result of the analysis for improving the management.

**The purpose** of the present paper is to identify discrimination in the organization for further prevention of such facts. For this purpose, a special questionnaire was developed.

**The Methodology** Statistical analysis of discrimination issues was made using the Statistical Package for the Social Sciences (SPSS). The questionnaire was filled out by 488 respondents living and working in Georgia. 5 hypotheses were determined in order to find out the correlation between some indicators and their impact level to discrimination in the workplace. Evaluation of the impact of those indicators was performed using Multiple Analysis of Variance (MANOVA) by using multivariate analysis.

**Keywords:** Discrimination, employee, workplace, organizational policy and culture.

**JEL classification:** M12, M51, M54

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### INTRODUCTION

In the conditions of modern globalization, human capital is the most important factor in terms of the competitiveness and development of the country and its economy in the world market. (Paresashvili et al, 2021). For Georgia, like for any other country, reproduction of human capital, which responds to the modern challenges of the innovative economy is the main condition for economic growth. High unemployment, which causes quite negative economic and social consequences in the daily life of any country, represents the most important barrier to full utilization of human capital. (Paresashvili, Okruashvili, & Edzgeradze, 2020).

Discrimination may be charged using two legal theories. The first is disparate treatment, in which there is evidence that members of protected groups are treated differently. The second legal theory is adverse (or



disparate) impact, in which members of protected groups are adversely affected by employment practices that may not initially appear discriminatory. For example, employment practices not explicitly intended to be discriminatory (such as the use of ability tests and high school diplomas) may nonetheless be viewed as such if they result in inferior outcomes for a protected class (if, additionally, they are not demonstrably job-related (Sims, 2018). Discrimination means refusing to employ, barring from employment, or discriminating in compensation or terms, conditions, and privileges of employment. Employers also can't print or circulate statements, advertisements or publications, use job applications, or make pre- employment inquiries that directly or indirectly express any actual or intended limitation, specification, or discrimination regarding a protected class, unless this restriction is based on a bona fide occupation. Employers and their employees can't aid, abet, incite, compel, or coerce unlawful discriminatory acts or try to do so. The opportunity to obtain employment without discrimination based on protected classes is considered a civil right (NCSL, Bloomberg Law, 2019).

Employment discrimination happens when an employee or job candidate is treated unfavorably because of age, disability, genetic information, national origin, pregnancy, race or skin color, religion, or sex. In addition, federal laws against discrimination protect workers from retaliation for “asserting their rights to be free from employment discrimination” (U.S. Equal Employment Opportunity Commission, 2020). Workplace discrimination occurs when an individual is discriminated against due to any number of factors. In addition to the reasons listed above, employees and job applicants can also be discriminated against because of their relationship to another person (EEOC, 2020).

There are different types of discrimination like gender, age, Physical, intellectual, mental or psychiatric disability, Pregnancy or potential pregnancy, Marital status, relationship status and family or carer's responsibilities, Religion, Political opinion. But It should be noted also, that in order to discuss about discrimination in a relevant way we should differ it from harassment or other type violence in the workplace:

- Discrimination occurs where someone is treated less favourably due to a particular protected attribute, even if the treatment isn't openly antagonistic – for example, not getting a promotion because you are pregnant, or being the subject of “joking banter” by reference to that protected attribute – and even where it is indirect – for example an employer may say they are open to employing people with disabilities, but do not provide appropriate access;
- Harassment is when someone is treated in a way that is offensive, humiliating, intimidating or threatening because of a particular attribute like coming from another country;
- Sexual harassment is unwelcome advances or attention of a sexual nature;
- Bullying is repeated unreasonable behaviour that places the affected person's health or wellbeing at risk.

Bullying and harassment are considered discriminatory behaviour if they are motivated by a protected attribute of the victim, like a disability (MDC Legal, 2017) or qualification.



The main aim of the article is to investigate the most acute problems in the labor market of the country and outline the most effective management mechanisms in order to solve them. More concretely, the purpose of the present paper is to identify discrimination in the organization for further prevention of such facts. For this purpose, a special questionnaire was developed. The questionnaire was filled out by 488 respondents. Statistical analysis of discrimination issues was made using the Statistical Package for the Social Sciences (SPSS).

## LITERATURE REVIEW

COVID-19 has shifted a significant portion of business around the world into a phase of economic uncertainty. (Paresashvili et al, 2021).

Job satisfaction affects a number of organizational behaviors and can greatly determine employee well-being. (Paresashvili, Okruashvili, & Chitaladze, 2021). Furthermore, Human Resource (HR) professionals together with management should make more effort to feel employees involved in organizational processes again, to strengthen their organizational culture and adaptation motivational systems. Every organization has specific style, specific rules, policy and situations which cannot be combine in general rules (Maisuradze, 2017). It is inconceivable to discuss discrimination issues without organizational conflicts, on which quite a lot of research has been done. (Paresashvili et al, 2020). Today, there are rich scientific literature on organizational conflicts conducted by foreign and Georgian researchers, which analyzes a number of issues directly related to conflict management. One of them is the topic of career development. (Paresashvili et al, 2019).

The most important thing for each individual is career advancement and professional growth, in which issues of managing organizational conflicts are quite important, (Paichadze et al, 2019), because it is quite difficult to focus on work processes in a contradictory environment. M. Puangshiri and H. Kleiner (2001), are discussing the retaliatory discrimination issues in their article “What Is Retaliatory Discrimination at Work?”. They highlight the acute problems during working process, especially for workers with disabilities. Also, they discuss about the effects of retaliation and make conclusion that the retaliation always costs more than it is worth since damages in a retaliation claim are usually based on the wages that were lost (Puangshiri & Kleiner, 2001).

The problems of workplace discrimination have been studied for so many years. Very interesting and useful article was published in Great Britain in 1998, which is about discrimination and the debates in England and Wales of that time (Roberts, Vickers, 1998). Z.V. Krinitcyna and E.V. Menshikova (Krinitcyna & Menshikova, 2014) a discussed some relative issues in their article “Discrimination issues in the process of personnel selection”. The paper discusses the concept of employment discrimination and its types, depending on the causes. The analysis of problems of social (gender and age) and psychological (racial and religious affiliation, disability) discrimination is given (Krinitcyna&Menshikova, 2014). Linda R. Tropp (2006) in her



article “Stigma and Intergroup Contact Among Members of Minority and Majority Status Groups” admits that beyond emphasizing conditions of the contact situation, we must also recognize that group members have histories of perceptions and experiences that are likely to inform their understanding of the intergroup relationship (Tropp, 2006). Stacey Sinclair and Jeff Huntsinger emphasize cultural aspects in their article “The Interpersonal Basis of Self-Stereotyping”. Their research found support for the affiliative social-tuning hypothesis, which argues that the stereotype-relevant evaluations of others will translate into self-evaluations and corresponding behavior when affiliative motivation is high as opposed to low (Sinclair & Huntsinger, 2006).

Toni Schmader and Brian Lickel also discuss about ethnical and cultural characteristics. The data from the article “Stigma and Shame: Emotional Responses to the Stereotypic Actions of One’s Ethnic Ingroup” provide evidence that shame plays a unique role in how individuals who are ethnically stigmatized react to the stereotypic behaviors of their ingroup. Although these actions elicit high levels of both shame and anger, it is shame that is predicted by the importance one places on his or her ethnic identity and it is shame that is distinctly predictive of distancing from the group or doing something to repair the image of the group in response (Schmader & Lickel, 2006).

It is essential to study the discrimination peculiarities in other types of firms, small and medium sized firms are really important in this regard for Georgia. Because the greatest number of firms occupies SMEs in our country (Abesadze & Kakulia, 2008). There are some cases that employees agree to work in the environment that is not fair and free for them. The main reason is that they work for their living. So, the poverty makes people face such kind of problems and sometimes it is a normal for them (Kakhniashvili, 2017). So, first of all they need to be informed that there are some institutions in the country which can work for their rights and on the other hand relevant departments and Economic Policy Makers of the State should work for overcome the most acute problem, unemployment in the country and improve the socio-economic situation (Tugushi & Paresashvili, 2007). For this reason, it is important to study the structure of unemployment in a systematic way (The Structure of Unemployment and Structural Unemployment in Georgia, 2016).

## **METHODOLOGY**

The part of the questionnaire referring to discrimination issues included the questions like:

- I have been a witness or victim of discrimination (discrimination includes direct or indirect arassment of a person aimed at or resulting in creating an intimidating, hostile, humiliating, degrading, or abusive environment for that person, or creating the circumstances for a person directly or indirectly causing their condition to deteriorate as compared to other persons in similar circumstances);
- Organizational culture and policy of the company prevents discrimination;
- The company adequately responds to discrimination;
- Despite the differences there is no problem of communication between the employees. With the



purpose of studying the issues of discrimination and statistical analyzing them statistically, some hypotheses were determined:

**HP 1:** Age, gender, education and respondent's position affects the part of the questionnaire referring to discrimination issues or the variables: Q1 - I have been a witness or victim of discrimination; Q2 - Organizational culture and policy of the company prevents discrimination; Q3 - The company adequately responds to discrimination; Q4 - Despite the differences there is no problem of communication between the employees.

**HP 2:** Age affects the part of the questionnaire referring to discrimination issues

**HP 3:** Gender affects the part of the questionnaire referring to discrimination issues

**HP 4:** Education affects the part of the questionnaire referring to discrimination issues

**HP 5:** Respondent's position affects the part of the questionnaire referring to discrimination issues.

Evaluation of the impact of age, gender, education and respondent's positions on the part of the questionnaire referring to discrimination issues was performed using Multiple Analysis of Variance (MANOVA), which is done in SPSS by using multivariate analysis (factor analysis on several dependent variables). Using multivariate tests allowed us to receive the tables, based on which we made different conclusions. Correlation analysis was used to determine the strength of the connection between factors and dependent variables.

In addition to factor analysis, the paper also provides tables presenting the distribution of the frequency of discriminatory variables with their visual representation and consumer tables.

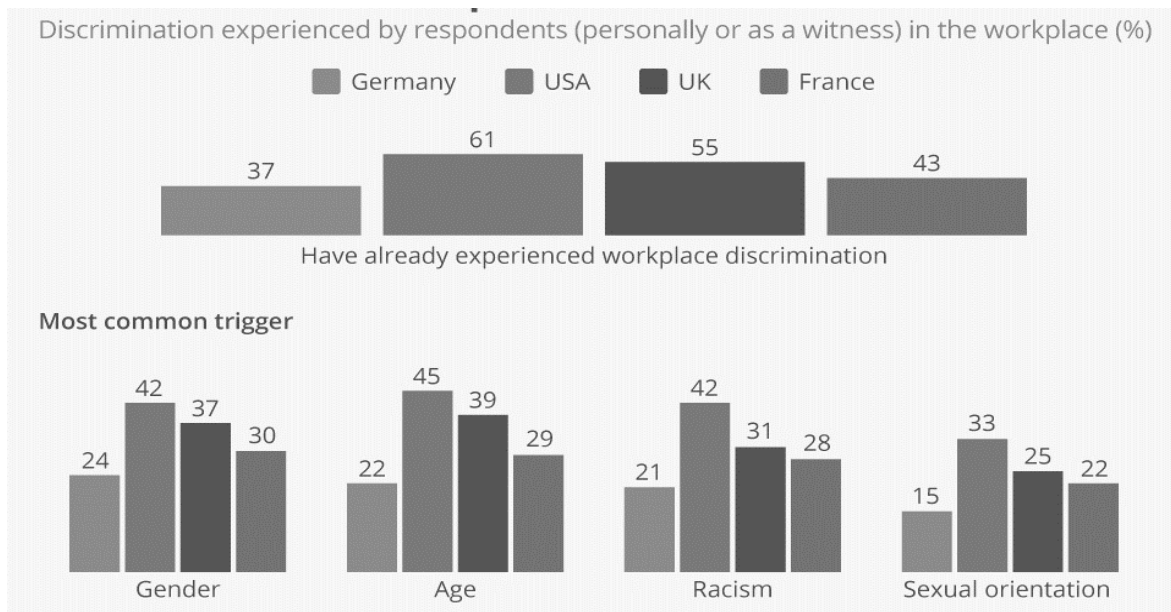
## DISCUSSION

Frequency distribution tables of discriminatory variables and the corresponding figures show that 39% of the respondents have never been a witness or victim of discrimination; another 39% of the respondents consider that they have partly been a witness or victim of discrimination and 22% of the respondents (which is quite a large number) confirm to have been a witness or victim of discrimination (Table 1). It is noticeable that in the compare with developed European countries Georgia has the lower percentage – 22%, than for example, Germany, France, UK and not only European, besides them USA too according to the statista data based on the survey conducted in 2019 (McCarthy, 2019) (Fig. 1).

**Table 1.** I have been a witness or victim of discrimination

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	108	22%	22%	22%
	No	191	<b>39%</b>	39%	61%
	Partly	189	<b>39%</b>	39%	100%
	<b>Total</b>	<b>488</b>	<b>100%</b>	<b>100%</b>	

*Source: Author's creation using SPSS*



**Fig. 1.** Workplace Discrimination in Germany, USA, UK, France in 2019, (%)

Source: Statista, <https://www.statista.com/chart/19761/discrimination-experienced-by-respondents-in-the-workplace/>

As an answer to the question “Organizational culture and policy of the company prevents discrimination”, half of the respondents think that discrimination is prevented only partly; 33% consider that organizational culture and policy of the company prevents discrimination and 17% believe that discrimination is not prevented by organizational culture and policy (see Table 2).

**Table 2.** Organizational culture and policy of the company prevents discrimination

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Do not agree	83	17%	17%	17%
	Partly agree	246	<b>50%</b>	50%	67%
	Fully agree	159	33%	33%	100%
	<b>Total</b>	<b>488</b>	<b>100%</b>	<b>100%</b>	

Source: Author’s creation using SPSS

It is really worthy of attention that quite a large number of respondents (17%) consider that organizational culture and policy of the company does not prevent discrimination.

36% of the respondents think that companies only partly respond to discrimination (Table 3), 32% consider that the cases of discrimination are responded by companies and sadly, another 32% think that companies do not respond to discrimination.

**Table 3.** The company adequately responds to discrimination

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	156	32%	32%	32%
	No	154	32%	32%	64%
	Partly	178	36%	36%	100%
	<b>Total</b>	<b>488</b>	<b>100%</b>	<b>100%</b>	

*Source: Author's creation using SPSS*

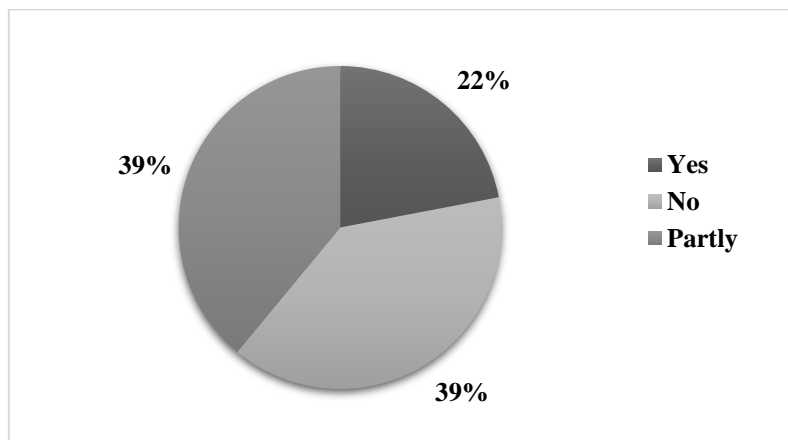
39% of the respondents believe that despite the differences there is no problem of communication between the employees, 35% partly agree that there is no problem of communication and quite a large number of respondents (26%) do not agree that despite the differences there is no problem of communication between the employees.

**Table 4.** Despite the differences there is no problem of communication between the employees

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Yes	190	<b>39%</b>	39%	39%
	No	128	26%	26%	65%
	Partly	170	35%	35%	100%
	<b>Total</b>	<b>488</b>	<b>100%</b>	<b>100%</b>	

*Source: Author's creation using SPSS*

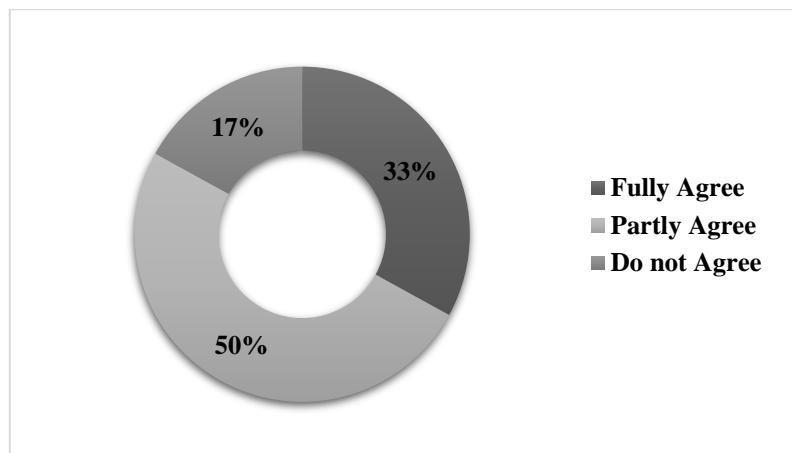
Visual representation of the distribution of the frequency of discriminatory variables is presented below.



**Fig. 2.** Distribution of the answers of “I have been a witness or victim of discrimination”

*Source: Author's creation using SPSS*

According to the given Figures above, it should be noted that the discrimination problem is really one of the acutest ones at the workplaces in Georgia. To our mind the most problematic part of workforce are who do not speak out loud about their problems or they partly show their attitude toward the discrimination. If we observe the data well, we notice that the most percentage comes to exactly such kind of respondents. It means that they are potentially more “yes” than “no” discriminated employees.



**Fig. 3.** Distribution of the answers of “Organizational culture and policy of the company prevents discrimination”  
*Source: Author’s creation using SPSS*

The second problem is that in the case when people speak about their problems and report them. What is the answer of the company, government or other institutions? In most cases in Georgia after reporting the workplace problems, they get the aid partly or not at all. Although, surprisingly or not Georgia is not the only country where these problems exist. The surA a sweeping study of 193 countries by the UCLA World Policy Analysis (University of California, Los Angeles) reveals critical gaps in legal protections against discrimination on the job. The researchers found that 28% of high-income countries do not have any protections, compared to 19% of low-income countries and 23% of middle-income countries. Even in countries that prohibit discrimination, substantial gaps in legal protections exist. Globally, 51% of countries offer no protection from retaliation against workers who report discriminatory treatment based on race or ethnicity, preventing individuals from accessing justice, the study revealed (UCLA World Policy Analysis Survey, 2020).

So, as graphic analysis of frequency distribution shows, great attention should be paid to the issues of discrimination and looking for the ways to eliminate such incidents. Distribution of frequency of the company's response to discrimination in accordance with the respondents' position and education is presented on Table 5;

As Table 5 shows, the majority of the respondents answering the question about the company's respond to discrimination are on non-managerial positions. Despite education, 169 of the respondents think that cases of



discrimination are only partly responded, 146 respondents consider that the company does not respond to discrimination and only 106 respondents consider that discrimination is responded.

Most of the respondents with secondary education think that the company does not respond to discrimination incidents at all.

**Table 5.** Respodent’s position

		Managerial			Non-managerial		
		The company adequately responds to discrimination			The company adequately responds to discrimination		
		Yes	No	Partly	Yes	No	Partly
		Frequency	Frequency	Frequency	Frequency	Frequency	Frequency
<b>Education</b>	<b>Secondary education</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>32</b>	<b>24</b>
	<b>Bachelor’s student</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>9</b>
	<b>Master’s student</b>	<b>21</b>	<b>2</b>	<b>6</b>	<b>28</b>	<b>19</b>	<b>33</b>
	<b>Doctoral student</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>13</b>	<b>11</b>
	<b>Bachelor's degree holder</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>25</b>	<b>40</b>	<b>41</b>
	<b>Master's degree holder</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>18</b>	<b>28</b>	<b>31</b>
	<b>PhD degree holder</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>13</b>	<b>13</b>	<b>20</b>
	<b>Total</b>	<b>50</b>	<b>8</b>	<b>9</b>	<b>106</b>	<b>146</b>	<b>169</b>

*Source: Author’s creation using SPSS*

Majority of master’s students with active status, as well as master’s degree holders and most of the PhD degree holders consider that discrimination is partly responded.

Bachelor’s degree holders working on non-managerial positions are most active - 41 of them think that discrimination is only partly responded by the organization and 40 of them think that discrimination is not responded, which clearly indicates the necessity of solving the issues of discrimination.

Master’s degree holders, working both on managerial and non-managerial (21 master’s degree holders on managerial and 28 master’s degree holders on non-managerial) positions, are most active in the category “Yes”.

The consumer table below (Table 6) illustrates frequency distribution of the variable “Organizational culture and policy of the company prevents discrimination” by gender and age.



**Table 6.** Organizational culture and policy of the company prevents discrimination

				<b>Do not agree</b>	<b>Partly agree</b>	<b>Fully agree</b>	<b>Total</b>
				Frequency	Frequency	Frequency	Frequency
q2 gender	Female	Age	18-32	6	22	23	51
			33-42	9	22	18	49
			43-52	13	28	16	57
			52>	9	26	13	48
	Male	Age	18-32	11	27	15	53
			33-42	13	34	28	75
			43-52	15	58	25	98
			52>	7	29	21	57

*Source: Author's creation using SPSS*

As table 6 shows, only female respondents aged between 18 and 32 years old consider that organizational culture and policy of the company prevents discrimination.

Respondents of both genders belonging to other age groups consider that organizational culture and policy of the company only partly prevents discrimination.

Analysis of graphical and consumer tables show that different approach and measures are needed for the organization.

Multiple analysis of variance (MANOVA) was used to examine and prove the hypotheses. We constructed tables by using its tests, based on which we made some conclusions and examined hypotheses.

Table 7, received as a result of dispersion analysis, shows the outcome of Levene's Test of equality of error variances. Table 7 shows which of the particular discriminative variables are affected by the factors like age, gender, education and respondent's positions.

According to Levene's test, the combination of these factors affects all four dependent variables. According to Table 7, there is a statistically important connection between the given factors and each of the variables. Statistically significant connection is found with Q1, Q3 and Q4 on the level of 0.01 ( $P < 0.01$ ), and with Q2 - on the level of 0.05 ( $P = 0.047$ ). However, according to the F test, variable Q3 (The company adequately responds to discrimination) is most affected by the factors ( $F = 2,175$ ,  $P$  does not exceed 0.001); it is followed by variable Q1 (I have been a witness or victim of discrimination) ( $F=2,074$ ,  $P$  does not exceed 0.001-b), then variable Q4 (Despite the differences there is no problem of communication between the employees) ( $F = 2,030$ ,  $P$  does not exceed 0.001) and variable Q2 (Organizational culture and policy of the company prevents discrimination) is least affected ( $F = 1.298$ ,  $P = 0.048$ ).

Table 7 proved Hypothesis 1 - the combination of the factors like age, gender, education and respondent's position affects the part of the questionnaire referring to discrimination issues: Q1 - I have been a witness or victim of discrimination; Q2 - Organizational culture and policy of the company prevents discrimination; Q3



- The company adequately responds to discrimination; Q4 - Despite the differences there is no problem of communication between the employees.

**Table 7.** Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
Q1 I have been a witness or victim of discrimination	2.074	93	394	.000
Q2 Organizational culture and policy of the company prevents discrimination	1.298	93	394	.047
Q3 The company adequately responds to discrimination	2.175	93	394	.000
Q4 Despite the differences there is no problem of communication between the employees	2.030	93	394	.000

*Source: Author's creation using SPSS*

### Assessment

Assessing the impact of individual factors on the part of the questionnaire referring to discrimination issues:

#### Assessing the impact of age

Table 8, received as a result of dispersion analysis, shows the assessment of the impact of age variable on the part of the questionnaire referring to discrimination issues.

As shown in Table 8, age affects only variable Q3 (the company's response to discrimination) as level of statistical significance is equal to 0.49 (which is less than 0.05), which means that different groups of age have different opinions regarding this question (Q3).

The correlation analysis (Table 12) between age and Q3 variable (the company's response to discrimination) revealed weak positive correlation (correlation coefficient  $r=0.102$ ).

Therefore, HP2 was proved only partially – age affects Q3 variable (weak positive correlation of the company's respond to discrimination) and does not affect the following variables: Q1 - I have been a witness or victim of discrimination; Q2 - Organizational culture and policy of the company prevents discrimination; Q4 - Despite the differences there is no problem of communication between the employees. Thus, the opinions of various age groups regarding the company's respond to discrimination are quite different.

**Table 8.** Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Q1 I have been a witness or victim of discrimination	Contrast	1,779	3	0,593	1,071	0,361	0,008
	Error	218,237	394	0,554			
Q 2 Organizational culture and	Contrast	2,284	3	0,761	1,669	0,173	0,013



policy of the company prevents discrimination	Error	179,677	394	0,456			
Q3 The company adequately responds to discrimination	Contrast	5,049	3	1,683	2,502	0,049	0,019
	Error	264,967	394	0,673			
Q4 Despite the differences there is no problem of communication between the employees	Contrast	3,392	3	1,131	1,557	0,199	0,012
	Error	286,091	394	0,726			

Source: Author's creation using SPSS

### Assessing the impact of gender on the part of the questionnaire referring to discrimination issues

Assessment of the impact of gender is provided based on Table 9 received as a result of dispersion analysis

Table 9. Univariate Tests

Dependent Variable		Sum of Square s	df	Mean Square	F	Sig.	Partial Eta Squared
Q1 I have been a witness or victim of discrimination	Contrast	0,433	1	0,433	0,765	0,382	0,002
	Error	228,756	404	0,566			
Q 2 Organizational culture and policy of the company prevents discrimination	Contrast	0,483	1	0,483	1,069	0,302	0,003
	Error	182,330	404	0,451			
Q3 The company adequately responds to discrimination	Contrast	2,591	1	2,591	4,099	0,044	0,010
	Error	264.967	394	0.673			
Q4 Despite the differences there is no problem of communication between the employees	Contrast	0,000	1	0,000	0,000	0,000	0,000
	Error	286.091	394	0.726			

Source: Author's creation using SPSS

As shown in Table 9, which was received as a result of dispersion analysis, gender also affects only variable Q3 (the company's response to discrimination), statistically significant correlation on the level of 0.05 is shown between gender and the above variable (the level of statistical significance is equal to 0.44, which is less than 0.05). Therefore, the opinions of female and male respondents regarding this issue are different.

The correlation analysis (Table 12) between gender and Q3 variable (the company's response to discrimination) showed very weak positive correlation (correlation coefficient  $r=0.077$ ).

Therefore, HP3 was proved partially – gender affects only Q3 variable (the company responds to discrimination) with very weak positive correlation and does not affect the following variables: Q1 - I have been a witness or victim of discrimination; Q2 - Organizational culture and policy of the company prevents discrimination; Q4 - Despite the differences there is no problem of communication between the employees.

### Assessing the impact of education on the part of the questionnaire referring to discrimination issues



Assessment of the impact of education on the part of the questionnaire referring to discrimination issues is provided based on Table 10 received as a result of dispersion analysis.

**Table 10.** Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Q1 I have been a witness or victim of discrimination	Contrast	4,337	6	0,723	1,305	0,254	0,019
	Error	218,237	394	0,554			
Q 2 Organizational culture and policy of the company prevents discrimination	Contrast	2,261	6	0,377	0,826	0,550	0,012
	Error	179,677	394	,456			
Q3 The company adequately responds to discrimination	Contrast	7,380	6	1,230	1,829	0,092	0,027
	Error	264,967	394	0,673			
Q4 Despite the differences there is no problem of communication between the employees	Contrast	6,678	6	1,113	1,533	0,166	0,023
	Error	286,091	394	0,726			

Source: Author's creation using SPSS

As shown in Table 10, the education variable does not affect any dependent variable; the level of statistical significance for each variable exceeds 0.05.

Accordingly, HP4 was not proved – education does not affect the part of the questionnaire referring to discrimination issues.

**Assessing the impact of the respondent's position on the part of the questionnaire referring to discrimination issues**

Assessment of the impact of the respondent's position is provided based on Table 11 received as a result of dispersion analysis.

**Table 11.** Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Q1 I have been a witness or victim of discrimination	Contrast	1,255	1	1,255	2,217	0,026	0,005
	Error	228,756	404	0,566			
Q 2 Organizational culture and policy of the company prevents discrimination	Contrast	0,010	1	0,010	0,021	0,884	0,000
	Error	182,330	404	0,451			
Q3 The company	Contrast	28,967	1	28,967	45,823	0,000	0,102



adequately responds to discrimination	Error	255,390	404	0,632			
Q4 Despite the differences there is no problem of communication between the employees	Contrast	6,774	1	6,774	9,356	0,002	0,023
	Error	292,523	404	0,724			

Source: Author's creation using SPSS

Table 11 shows that the respondent's position affects Q1, Q3 and Q4 variables – with statistically significant correlation on the level of 0.01 with Q3 and Q4 and on the level of 0.05 with Q1. According to F tests and the level of statistical significance, variable Q3 (the company responds to discrimination) is most affected ( $F=28,967$ ), it is followed by variable Q4 (Despite the differences there is no problem of communication between the employees), where  $F=6,774$ , and  $P<0.01$  and finally, variable Q1 (I have been a witness or victim of discrimination) with statistical significance on the level 0.05 ( $P=0.026$ ).

Consequently, the opinions of the respondents working on managerial and non-managerial positions turned out to be quite various about Q1, Q3 and Q4 variables.

The correlation analysis (Table 12) between the respondent's position and Q3 variable (the company's response to discrimination) revealed positive correlation of medium strength (correlation coefficient  $r = 0.317$ ); weak positive correlation was shown between the respondent's position and the variables Q4 (despite the differences there is no problem of communication between the employees) and Q1 (I have been a witness or victim of discrimination).

Accordingly, HP4 was partly proved – the respondent's position affects variable Q3 (The company responds to discrimination) with positive correlation of medium strength and on the variables Q4 (despite the differences there is no problem of communication between the employees) and Q1 (I have been a witness or victim of discrimination) with weak positive correlation and does not affect variable Q2 (Organizational culture and policy of the company prevents discrimination).

**Table12.** Correlations

		Age	Gender	Education	Respondent's position
<b>I have been a witness or victim of discrimination</b>	Pearson Correlation	0,027	-0,027	-0,027	0.102*
	Sig. (2-tailed)	0,547	0,551	0,557	<b>0,024</b>
	N	488	488	488	488
<b>Organizational culture and policy of the company prevents</b>	Pearson Correlation	-0,036	-0,006	-0,001	-0,014



<b>discrimination</b>	Sig. (2-tailed)	0,429	0,886	0,980	0,765
	N	488	488	488	488
<b>The company adequately responds to discrimination</b>	Pearson Correlation	0.102*	0,077	-0,018	0.317**
	Sig. (2-tailed)	<b>0,024</b>	<b>0,048</b>	0,695	<b>0,000</b>
	N	488	488	488	488
<b>Despite the differences there is no problem of communication between the employees</b>	Pearson Correlation	0,074	0,061	-0,035	0.134**
	Sig. (2-tailed)	0,101	0,179	0,438	<b>0,003</b>
	N	488	488	488	488

*Source: Author's creation using SPSS*

As statistical analysis shows, we have received many negative answers regarding the issues of discrimination and this should be taken into consideration while decision-making and leading the management of the organization efficiently.

## CONCLUSIONS

For millions of people in the world as well as in Georgia workplace discrimination is a real problem they concern. So, State institutes, facilitator organizations and the society should realize these problems and try together to deal with them.

As statistical analysis provided in this article shows, we have received many negative answers regarding the issues of discrimination in Georgia and this should be taken into consideration while decision-making and leading the management of the organization efficiently. And what is more important, as the authors we consume that there is always even a little be worse situation in real than such kind of research show, because no research can reflect the situation for 100 percent. Raising the quality of job opportunities available to all the workers that allow for a better work-life balance would improve their well- being, enhance their incentives to participate in the labour market and reduce the underutilization of their skills.

## Conflict of interests

The authors declare no conflict of interest.

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## HOW INDEPENDENT SCIENCE CAN CONTRIBUTE TO THE FIELD OF SOCIAL ENTREPRENEURSHIP IN SCANDINAVIA

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### ABSTRACT

*The purpose of the article is to suggest an analytical framework that shows how science can stimulate social entrepreneurship in the Scandinavian welfare states, and the difference between science and practice. The article relies on secondary source material, and is a work of synthesis and comparative science. The procedure has been to present thoughts and theories from outstanding scientists, authors and individuals who engage in topics related to entrepreneurship, innovation, social science and economic growth. The understanding of social entrepreneurship is built upon science on entrepreneurship in the European tradition. Because many different activities are called social entrepreneurship, this leads to a dilution of the concept. Innovation is free in thought and will, and it's the social entrepreneur that drives the innovation. Creativity is necessary for a successful innovation: the creative individual, creative process, creative environment and creative product. The entrepreneur's impact on the economy as a catalyst for growth and development of the society, is significant. We need independent international science and theories for social entrepreneurs to access independent information.*

**Keywords:** *Entrepreneurship in Scandinavia, social entrepreneurs, independent science, development of society, innovation, economic growth.*

**JEL classification:** A13, D69, O10, O35

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### INTRODUCTION

According to Joseph A. Schumpeter (1912), an entrepreneur is a creative leader who raises capital in order to spread new combinations of land and labour. It is the entrepreneur's effort through will and action that is essential for the success or lack of it. Capital can be used for means of production by the entrepreneur, but the process is not dependent on it. When using Schumpeter theory, a social entrepreneur is a creative leader who raises capital in order to spread new combinations of land and labour in a social system. A social entrepreneur's goal is to create a better world for the population. A social entrepreneur has never the role as a capitalist, an HR manager or a businessman. To be a social entrepreneur is not a profession, but a position that ends when a business is built and enters the static production function.



Scandinavian countries are facing new challenges in the social sector. Due to the emerging start-ups, incubators and political incentives, the Scandinavian countries have an opportunity to embrace the entrepreneurial economy and reap the benefits created by social entrepreneurs. The static system of the governments cannot do the same as private individuals. The reality has been dominated by an overflow of literature as well as political programs postulating the natural right given by the political system to take the lead in innovation, business entrepreneurship and social entrepreneurship. Only lately - over the past two decades, scientifically based literature has played a significant role in the development sphere of social entrepreneurship and innovation management in the Scandinavian context. Overall access to knowledge, markets and capital in Scandinavia is controlled by the government. The need for science to reveal political propaganda is crucial. When the roots of science are brought into the picture, political propaganda always fails.

Articles and books that are cited in this article have been carefully chosen. The literature review is based on works by Jean-Baptiste Say, Frederick W. Taylor, Joseph A. Schumpeter, Bengt Johannisson, Peter Drucker, Jan-Urban Sandal, and J. Gregory Dees. Their comprehensive scientific work could benefit scholars and other actors in the field of social entrepreneurship.

## **Materials and Methods**

This article aims to analyze social entrepreneurship, its effects on the three countries Denmark, Norway and Sweden, and examine the scientific, political and practical approach to entrepreneurship and social entrepreneurship. The layout of this article is a research into social entrepreneurship, theories on economic development, economic science and research on social entrepreneurship. The article relies on secondary source material, and is a work of synthesis and comparative science. It is a study performed during The Reading Course RC-01-A at Fil. Dr. Jan-U. Sandal Institute.

This study is based on theories on innovation, economic development, entrepreneurship, democracy and the welfare state. The procedure has been to present thoughts and theories from outstanding scientists, authors and individuals. Studies related to social and political development, innovation management and social entrepreneurship have been examined.

The target groups for this article are academics, students and practitioners. Other likely groups are scientists and teachers in the field of innovation, entrepreneurship and economic development. The study may be useful for entrepreneurs and individuals who want to create new combinations of the first and second production function.

## **Results**

The understanding of social entrepreneurship is built upon the science of entrepreneurship in the European tradition. Science describes a mentality and a behaviour that fits in all contexts about economic and social development. The understanding of social entrepreneurs is based upon a version of entrepreneurs (Sandal, 2008, p. 117). Richard Cantillon introduced the term entrepreneur to the field of economics in his text "Essai



sur nature du commerce en général”, published in 1755. Cantillon held that the entrepreneur played a social role in a financial system. He considered the entrepreneur to be a risk taker, a person who tries to balance supply and demand while he is bearing the risk.

Jean Baptiste-Say (1821) was convinced that the entrepreneur is an economic agent who unites the combination of land, labor and capital. He explained that the entrepreneur has the ability to bring to the market products that people need and want. Say also called the entrepreneur “the master agent”. By being the master agent, the entrepreneur must have a combination of moral qualities. He has the knowledge of the world, the knowledge of business, knows the art of administration and he must give attention to order and economy. The entrepreneur shifts economic resources out of an area of lower and into an area of higher productivity and greater yield.

In the book “*Teorie der wirtschaftlichen Entwicklung*” from 1912, Joseph A. Schumpeter gave innovation a key explanation in economic development. He stated that innovation is initiated by a single entrepreneur. He is able to combine land and labour in a way that previously was not possible or not as efficient as before. His theories are still valid in present time because an entrepreneur must master the same skills today as 100 years ago. The entrepreneur may obtain capital and must be able to realize the means of production. The entrepreneur uses his intuition, is able to persevere resistance, have freedom from everyday activities and behold enough stamina to lead the innovation process. The entrepreneur must be able to imagine the possible results of the input factors.

Recent theories on entrepreneurship came from William Baumol (1968), with his statement that in order to encourage entrepreneurship, it is necessary to create conditions that allow the entrepreneurial pursuit of self-interest to accord with social wealth creation. He also criticised entrepreneurship to be unproductive and even destructive in some societies, while it is productive in others.

Peter Drucker (1975) stated that an entrepreneur always searches for change, responds to it, and exploits it as an opportunity. Entrepreneurship is neither a science nor an art. It is a practice. Drucker considered the entrepreneur to be a unique agent of change and that successful innovation is a result of systematic hard work by the entrepreneur.

Bruce Kirchoff (1989) presented an analysis where he gave the innovative entrepreneur a key role in capitalism and showed his importance in shaping the structure and growth rate of capitalist nations. In the dynamic process of new firm formation and growth, in his analysis called entrepreneurship, creates new owners and jobs and thereby creating and distribution of wealth. The economic system characterized by the process of wealth creation and distribution, is dynamic capitalism. With this analysis, he gave the innovative entrepreneur a key role in capitalism and explained the entrepreneur's importance in modern society.

Some of the different theories presented give the entrepreneur credibility as a catalyst for economic growth by being the leader of innovation.

Michael Young (1968) used the term social entrepreneur in literature in the 1960s and the 1970s, but it was when Bill Drayton used the term during the 1980s, that the term gained a worldwide spread, and was embraced



by entrepreneurs in the US and U.K. According to Charles Leadbeater (1997), the value of social entrepreneurs comes in three main forms:

- In the short run, social entrepreneurs may bring measurable benefits to the wider economy by creating jobs, generating output or saving on public spending.
- In the medium run, they have great value as potential models for the reform of the welfare state, if they can work more productively in alliance with the public sector.
- Their more important long run contribution is their ability to create and invest social capital.

Values social entrepreneurs create in the economy is both monetary capital, but also social capital. The entrepreneurs are the actors that respond to opportunities, threats, uncertainties, constraints, and incentives emanating from the economic environment in which they operate. This puts social entrepreneurship together with entrepreneurship at the heart of economic growth and development.

### **The Scandinavian welfare states**

Scandinavia consists of the social democratic countries Norway, Sweden and Denmark, where the government is strong and is trusted by the populations. The countries have developed a welfare system over the last 75 years, and at the same time, the political power has been centralised. The Scandinavian welfare model is one of several models that exist in the world today and was inspired by the British welfare model.

Lysestøl (2001) stated that there are two conditions that must be present for a state to be a welfare state. First, financial politics must be managed in such a way that economic fluctuations are avoided. Second, social politics that secure appropriate living conditions for the population.

The Scandinavian countries developed their welfare states gradually, and began with small and means-tested programs for limited groups in the society. It was during the socialist wave in the 1950s and 1960s that the Scandinavian welfare model was molded into the basis of what the welfare states in Scandinavia of today rest upon.

In contrasts to states such as USA and the UK the political debate is more adversarial and there is more open conflict, the Nordic countries have been described as consensual democracies where the political system has a high degree of legitimacy and support, where social diversions have been relatively mild, and where political deliberations aim to neutralize conflict and achieve compromise (Hilson, 2008, p. 26).

The Scandinavian welfare state is facing serious challenges. The challenges are related to legitimacy, governability, economic efficiency and scope of activity. The political, cultural and financial climate has changed considerably and the welfare state is not able to adapt to these changes in an adequate way.

State intervention in the private sector is extensive in Scandinavian countries. The state controls the market in several niches, it controls through grants and governmental funding, and the banking and financial system. The financial sector is market-driven, although the Scandinavian governments have embraced state capitalism with their high level of government owned companies that also distort the countries' economies. State capitalism challenges the free-market both conceptually and practically.



The welfare state implies a social contract with the citizenry. It has now been one of the chief organizing principles of the lives of several generations and, hence, it represents a deeply institutionalized contract. Indeed, herein lies an obstacle to possibly any reform. As so much attitude research has shown, the welfare status quo remains very popular (Epsing-Andersen, 2002, p. 7).

Alliances between the state, large enterprises, and trade unions have created a highly regulated society with limited possibilities for individual initiatives. Entrepreneurship and social entrepreneurship are facing difficulties due to market situations that are similar to monopoly, systems that prevent entrepreneurs to compete on equal terms, and state owned companies that are difficult to compete with.

Social entrepreneurship is a recent term in Scandinavian countries and the field is diverse. Establishments from voluntary organizations to traditional enterprises call themselves social entrepreneurs. In most cases the organization, initiative, project, company or group is not a social entrepreneur but an enterprise with a social mission. Because many different activities are called social entrepreneurship, this leads to a dilution of the concept. It is important to distinguish social entrepreneurship from social service provision, corporate social responsibility (CSR) and social activism. A social entrepreneur is a changemaker in a welfare state and therefore can be regarded as a competitor, threat or critic of the welfare state and its institutions and governmental owned companies.

According to Petrella and Richez-Battesti (2014), the growing popularity of the social entrepreneurship notion therefore represents both a risk of dilution of third sector organisations among all forms of enterprises that make capitalism more human and an opportunity to innovate and build an alternative model. Indeed, if social entrepreneurship is seen as a private innovative solution to new societal challenges unmet by the state nor the market through an original way of combining resources, no alternative model is emerging. But, if social entrepreneurship is led by participative and democratic governance processes that imply a diversity of stakeholders and resources, it can be seen as a building block for an alternative model.

### **The scientific approach to social entrepreneurship**

The highest and noblest form of freedom a human can experience is science. Science is produced by a single person in a process where human thought and reason is the source of truth and acknowledgment. Science is not labour, and not production in any form (Santal, 2012, p. 168). While science is the stage before practice, research will always follow the practice. Research is to observe reality and explain it. Science is not knowledge, but science will eventually become knowledge. Science may lead to innovation. There are examples of people in history like: Einstein, Michelangelo and Schumpeter that show how free thought leads to free activity and creates big changes.

Since the beginning of the 1990s, research and the research community in the field has increased. With the number of published articles, number of scientists, an increased amount of journals and conferences focusing on innovation, entrepreneurship and social innovation has led to an opening of the field. To some extent, the community is still fragmented and the quality of research inconsistent.



Research in the area of social entrepreneurship has to a significant degree been focused on retelling stories about successful company ventures based on concepts taken from organizational theory and the fields of behaviour and management, with emphasis on values such as leadership, stability, teaching, information and collaboration (Sandal, 2010, p. 12).

Mair and Martí (2006) stated that social entrepreneurship, as a practice and a field for scholarly investigation, provides a unique opportunity to challenge, question, and rethink concepts and assumptions from different fields of economy, management and business research. They continue their argument on the knowledge of social entrepreneurship can only be enhanced by the use of a variety of theoretical lenses and a combination of different research methods. They explain that social entrepreneurship has different facets and varies according to the socioeconomic and cultural environment. Insights from sociology, political science and organization theory will enrich theoretical understanding of social entrepreneurship. Innovations resulting from the continuous interaction between social entrepreneurs and the context in which they and their activities are embedded, may encourage relevant research and strengthen the understanding of social entrepreneurship and its ethical, social, financial and political significance.

### **The practice of social entrepreneurship**

As the field of social entrepreneurship has grown and multiplied and wired itself together across the globe over the last 25 years, the rate of this plowing and seeding at the local level has accelerated dramatically (Drayton, 2006, p. 4). Leading social entrepreneurs are role models in the society and their contribution to recruit people to become changemakers are important, but they are few in numbers. Innovation carried through by leading social entrepreneurs overturn the existing pattern of local society. Innovations are accessible to all and attract followers and support in local communities and as such gain approval from neighbours, friends and family. Often a social entrepreneur has direct experience with the problem they want to solve and knows where the biggest challenges are in the sector, market and with the existing products or services.

Social entrepreneurs operate at the intersection of apparently contradictory parameters. They may bring change from the outside (exogenous), while at the same time they foster tendencies toward internal change (endogenous); their interventions seem sort of obvious and predestined (inevitability), although change may not have happened without people like them (contingency); they deal with people (methodological individualism) and at the same time they build new patterns, structures, laws, and symbols (sociological realism); finally, they are down to earth as they deal with concrete issues (realism), simultaneously influencing ideas, identification, and the level of hope (idealism); they bring direct, short-term solutions while at the same time aiming at far-reaching consequences, such as changing societal mindsets (Praszkier; Nowak, 2012, p. 48).

Social entrepreneurs have to be able to balance between different concepts and parameters such as innovation, social change, innovation management, idealism and capitalism. The ongoing development in the society and the changing field of social innovation demands considerable energy and mental effort from the



social entrepreneur. Social entrepreneurs are accepted and supported by local communities, entrepreneurs and citizens because they create jobs and economic growth.

## **Discussions**

Economic scientists were the first to explain and present the concept of entrepreneurship and its meaning in science, from Richard Cantillon to Peter Drucker and Bruce Kirchoff. Different economic theories give the entrepreneur credibility as a leader of innovation and being a catalyst for economic growth. Schumpeter's theories on entrepreneurship and innovation are still valid in present time because an entrepreneur must master the same skills today. The entrepreneur's ability to combine land and labour in a way that previously was not possible or not as efficient as before, makes him a creative leader of the past, present and of the future.

Economic development and possibilities for the private sector is dynamic and always changing. Entrepreneurs serve a key mechanism to contribute to economic growth due to the knowledge created which can be commercialized in an enterprise. This is also valid for social entrepreneurs. Anyone can be a social entrepreneur and it is his ability to raise capital in order to spread new combinations of land and labor in a social system that is important. A social entrepreneur is a changemaker in a welfare state and the creative leader of innovation in a social system. Innovation is a creative process and relates to a financial system but is not dependent on it because the need for capital is limited. It is the entrepreneur's effort that is essential for the success or lack of it and the government can not control the outcome of an innovation process prompted by an entrepreneur in an open market. There are unlimited possibilities for social entrepreneurs in a changing global economy. To be a social entrepreneur cannot be inherited and anyone in the society can take that position. A social entrepreneur has the same opportunity to manage an innovation process as a commercial entrepreneur, because the social entrepreneur has to use his skills to plan, organize and coordinate himself to create the outcome he wants. Anyone can develop the skills needed.

Innovations are not dependent on the government, financial systems, capital, or political policies. Innovations have to adapt to changes in the economy when the innovation process has finished and the production function has been established. The ability to manage the activities is crucial for the entrepreneur in order to move an idea to realization. If the entrepreneur does not manage the innovation process, then the ideas will most likely not be fulfilled.

The welfare state is dependent on innovations to efficiently run their hospitals, military, public transport etc. The welfare state is a static system and can never innovate or be a social entrepreneur. In a free market an entrepreneur will only have competition from other entrepreneurs. In the Scandinavian welfare states, the political influence, the static condition of the system and hierarchy limit the emerging entrepreneurial economy. To lead innovation, take risks, and manage oneself is something many Scandinavians are not used to, but it's crucial for the success of the entrepreneur. The opportunity for a social entrepreneur is always present in all countries at all times. It is the entrepreneur's ability to respond to opportunities, threats,



uncertainties, constraints, and incentives that creates new products, markets, organizations, methods of production or the conquest of new sources of raw materials.

In Scandinavian countries the state controls the market in several niches, it controls through grants and governmental funding, and the banking and financial system. The financial sector is market-driven, although the Scandinavian governments have embraced state capitalism with their high level of government owned companies that also distort the countries' economies. State capitalism challenges the free-market both conceptually and practically. Scandinavian governments have created a diversity of grants and funding programs where entrepreneurs can apply for capital. The funding comes with limitations for whom and what activities can get funding. In societies where power is highly monopolized, where free communication is guarded, or where there are no independent sources of money, entrepreneurship will be limited.

Entrepreneurship and social entrepreneurship are facing difficulties due to market situations that are similar to monopoly, or systems that prevent companies to compete on equal terms or state owned companies that are difficult to compete with. Even though the governments in the Scandinavian countries have stated that innovation and entrepreneurship is important and a prioritized field, there is a distance between visions and actions in governmental departments.

If research in the area of social entrepreneurship has been focused on retelling stories about successful company ventures based on concepts taken from organizational theory and the fields of behaviour and management, then science can be used as the source of truth and recognition.

When Sandal states that science is not labour, and not production in any form, science can then only be understood as a non financial activity. Science differs from both work and social innovation, because work and social innovation have the purpose of creating a service or a product. Science is the free thought and reason of a single human. Science is the stage before practice, and both science and research will give insights into social entrepreneurship and its significance in society.

The difficulty of reaching a consensus among scientists and researchers in the field of social entrepreneurship can be one of the reasons the definition and concept of social entrepreneurship is diluted.

In literature, social entrepreneurs are not considered to play a key role in a financial system. In practice, social entrepreneurs do not often reach large audiences and there is a need to increase impact across the globe to be considered an important part of the economy. Mair and Martí research into social entrepreneurship, shows that insights from sociology, political science and organization theory will enrich theoretical understanding of social entrepreneurship.

As Kirchoff stated, there is a growing interest in dynamic modeling of capitalism. The importance of innovation in shaping the structure and growth rate of capitalist nations is massive. The entrepreneur plays a crucial role in modern society as a catalyst for economic growth. A society that does not encourage entrepreneurs and social entrepreneurs will not reap the benefits from the creativity and innovation process. Innovation carried through by social entrepreneurs overturn the existing pattern of local society and are accessible to all citizens.



## CONCLUSION

Different economic theories give the entrepreneur credibility as a leader of innovation and being a catalyst for economic growth. Schumpeter's theories on entrepreneurship and innovation are still valid in present time because an entrepreneur must master the same skills today. The entrepreneur's impact on the economy as a catalyst for growth and development of the society, is significant.

Creativity is necessary for a successful innovation: the creative individual, creative process, creative environment and creative product. An economy where economic performance is related to distributed innovation and the growth of innovative ventures is an entrepreneurial economy.

The understanding of social entrepreneurship is built upon science on entrepreneurship in the European tradition. With the lack of reaching a consensus among scientists and researchers in the field of social entrepreneurship, combined with many different activities called social entrepreneurship, this leads to a dilution of the concept.

The Scandinavian welfare state is a static system where political influence, the static condition of the system and hierarchy limit the emerging entrepreneurial economy. The welfare state is static and can never take the role of a social entrepreneur. To lead innovation, take risks, and manage oneself is something many Scandinavians are not used to, but it's crucial for the success of the entrepreneur. In the Scandinavian countries people are free to spend their time on what they want. The opportunity for a social entrepreneur is always present in all countries at all times.

The value social entrepreneurs create in a financial system is both monetary capital and social capital. The entrepreneurs are the actors that respond to opportunities, threats, uncertainties, constraints, and incentives emanating from the economic environment in which they operate. This puts social entrepreneurship at the heart of economic growth and development.

We need independent international science and theories for social entrepreneurs to access independent information and the source of truth and acknowledgment. As science is the stage before practice, it will give insights into social entrepreneurship and its significance in society.

A society that does not encourage entrepreneurs and social entrepreneurs will not reap the benefits from the creativity and innovation process. Innovation carried through by social entrepreneurs overturn the existing pattern of local society and are accessible to all citizens.

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## Conflict of interests

The author declare no conflict of interest.

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## Monograph Review

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It is an honor to review the book “Books & Library International Searching of the World’s Libraries”. This is one of the books that should be voted as a must-read for citizens of our planet. It is a kind of surprising and unpredictable books that I advise to get acquainted with.

I cannot express what I expected it to be – maybe more like a guide thing but it turned out quite different. The book is a real story of cultural and historical significance and is a short journal from the time when its writer went travelling to the different countries in pursuit of invaluable things – people, books, knowledge.

The main idea of the book is to reveal what we can find of English language literature on innovations, entrepreneurship and social entrepreneurship in the world’s libraries.

This is not really a book about libraries, though information about different great libraries in many countries obviously do come into it. It is really about people, social responsibility, and our future. About conditions of growing up in the new generation; about our heritage and development; about being thrown into an amazing world of signs and senses. Libraries are the same wealth and riches of our world as gold, oil, water.

I just have to say it-- Books & Library International Searching the World’s Libraries is an inspiration to realize it.



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I do not think there is anyone who would not benefit from reading this book.

**REVIEWER:**

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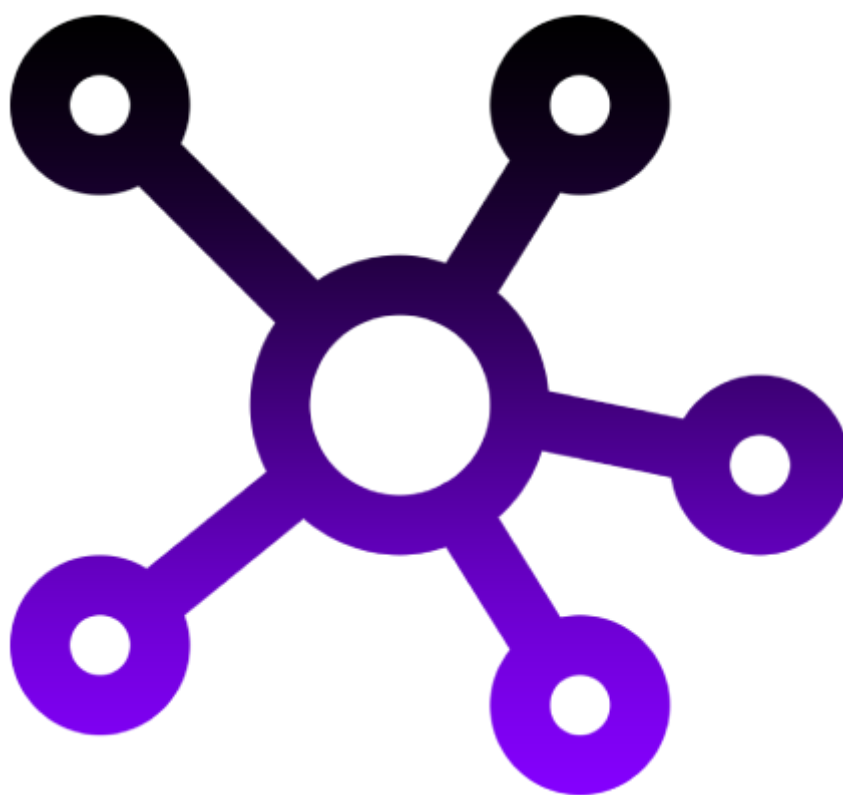
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