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## IMPORTANCE OF SOCIAL ASPECTS OF INDUSTRIALIZATION 4.0 FOR SMEs OF THE REPUBLIC OF MOLDOVA

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**Abstract:** *Talk about the Fourth Industrial Revolution is mainly related to the processes of digitalization and the penetration of artificial intelligence into our lives. Business, of course, is also undergoing significant changes under the influence of such cardinal processes. In this context, the social aspects of change are very important, so the management of organizational change should be focused on such extremely important elements as: ethics, social responsibility, values and principles of companies of the future.*

*Without such an important understanding of the transformational processes in society, social inequality can form, the concentration of power and monopolization by only a few large companies, aggravation of problems associated with the failure to implement the goals of the Sustainable Development Concept. The ideologists of the concept of the 4th industrial revolution pay great attention to "soft factors, which, along with technical aspects, lead to a completely different model of the functioning of society.*

*The object of study in the work are the SMEs of the Republic of Moldova, which are the most vulnerable in these challenges. Having insufficient resources and staff qualifications, it is more difficult for them to adapt to such changes, therefore, the purpose of the study is to develop guidelines for the development of enterprises of this type in a complex, uncertain environment of existence.*

**Keywords:** SME, Industrialization 4.0, Change Management, Business-Model, Model of Change, digitalization

**JEL Classification:** M14, M19

### 1 INTRODUCTION

The essence of the concept of Industrialization 4.0 is difficult to present unambiguously, given the variety of concepts and the views of the authors on this process. First of all, it implies the development and implementation of advanced technologies that are the basis of transformations. Secondly, it means changing the entire economy and the processes of relationships between the main actors, building ecosystems with completely different models. Thirdly, by no means the last, and perhaps the paramount importance is the social changes that are the result of such transformations.

As with any transformation process, there are positive and negative consequences. Depending on the chosen approach, they will be reflected to a greater or lesser extent on human life in general and in particular, in the activities of enterprises, new requirements for employees, the emergence of new professions, etc. Thus, one of the significant research problems is social inequality, which arises from the emerging new conditions of existence, due to the possibility or lack of use of the latest technologies, knowledge and communication systems, which are both advantages and limitations depending on the conditions.

This problem is more typical for certain categories of countries, and also, given the in-country specifics, for some categories of enterprises. In particular, small and medium-sized enterprises are more susceptible to it, given their functioning features: limited financial resources, personnel, in-house knowledge, increased competition from large companies, etc.

Therefore, the *object of research* in this context is SMEs, as enterprises, in a sense, wounded, with specific problems, as well as specific possible solutions. At the same time, let us clarify that this work is part of a larger study funded from the state budget of the Republic of Moldova and dedicated to the creation of an organizational change management model for SMEs from the Republic of Moldova. Thus, an integral part of this model is the part associated with social transformations and the social consequences of these changes, both for the enterprises under study, and for society and the Republic of Moldova as a whole.

## **2 THEORETICAL AND PRACTICAL ASPECTS OF SOCIAL TRANSFORMATIONS IN THE MODERN WORLD**

### **2.1 Review of theoretical research in the field of the Fourth Industrial Revolution and possible consequences for society**

Considering the complexity of all the ongoing and upcoming changes, almost all researchers characterizing the provocations of the Fourth Industrial Revolution, or Industrialization 4.0, focus on ways to possibly overcome the crisis associated with social changes.

According to the author of the concept of Industrialization 4.0, Klaus Schwab, "this is a collective term that refers to a whole set of ongoing and upcoming transformations in the familiar systems around us" (Schwab, 2019)

Schwab also clarifies the main tasks facing humanity in the near future.

- This is, firstly, a fair distribution of the benefits of the Fourth Industrial Revolution. He talks about the uneven distribution of advantages in previous industrial revolutions. Therefore, realizing possible problems, it is necessary to think about them today.
- The second task is related to the need to control the negative consequences and risks associated with transformational changes. Including, the protection of vulnerable groups of the population, the environment and the conscious use of new opportunities.
- The third direction should be connected with respect for universal human values. So, all processes should unfold under the control of a person and in the interests of a person. In any change, financial motives must be secondary and give way to humanity.

Considering the subject of this study, it is of interest to consider the problem of social change through the prism of managerial thinking. In this direction, Schwab makes the following recommendations:

- it is fundamentally important to focus on systems that ensure the well-being of people, and not the productivity of technologies;
- new technologies should provide people with more opportunities, choices, and prospects. Don't turn technology against human capabilities;
- applying systemic and humanistic thinking, it is necessary to focus on new configurations that control the world;

- values need to be built into all stages of the innovation process. Then, when values are thought about only after innovations become destructive, it is already too late to change something.

Another specialist in the field of transformational change, T. Siebel, emphasizes the importance of developing flexible training programs for staff. The scientist predicts that in five years about 35% of professional skills will change. To do this, already today, in educational institutions it is necessary to develop a balanced approach between soft skills and hard skills, contrary to the established approach, focus on hard skills. (Siebel, 2019)

Another management guru, Tom Peters, goes to great lengths to explain the phrase “People matter most” as he explains that combining human potential with artificial intelligence should bring additional competitive advantage to a company, not deprive a person of a job. (Peters, 2020)

Andrew McAfee and Eric Brynjolfsson also highlight the importance of sharing the human mind with machine algorithms. Speaking about the significant advantages of the computing power of machines, the authors still believe that the advantages of a person are associated with many factors, in particular: systems thinking, which considers all factors at once in the decision-making process, unforeseen circumstances that are not initially programmed by a computer program, common sense, which the person has. (McAfee & Brynjolfsson, 2019)

The idea of rational use of the advantages of new platforms and information technologies is supported by Tim O’Reilly, who argues that the policy that determined 40 years ago the division of society into rich and poor should not continue into the future. And so, technology must reorient the world to a new stage of development. (O’Reilly, 2017)

With these statements, it is possible to argue the importance of the human and social component in the process of change, as well as later, in the functioning of the transformed enterprises.

## **2.2 Cross-country development patterns: exacerbating the divide between rich and poor**

So, one of the social problems, according to many researchers (Schwab, Siebel, O’Reilly etc.) is the digital divide. Inequality tends to accelerate as the transformational processes accelerate. Given that a certain level of technical skills and the availability of high-speed networks are a prerequisite for Industrialization 4.0, the advantage remains on the side of those countries and populations whose level of education and income will ensure rapid adaptation to new conditions.

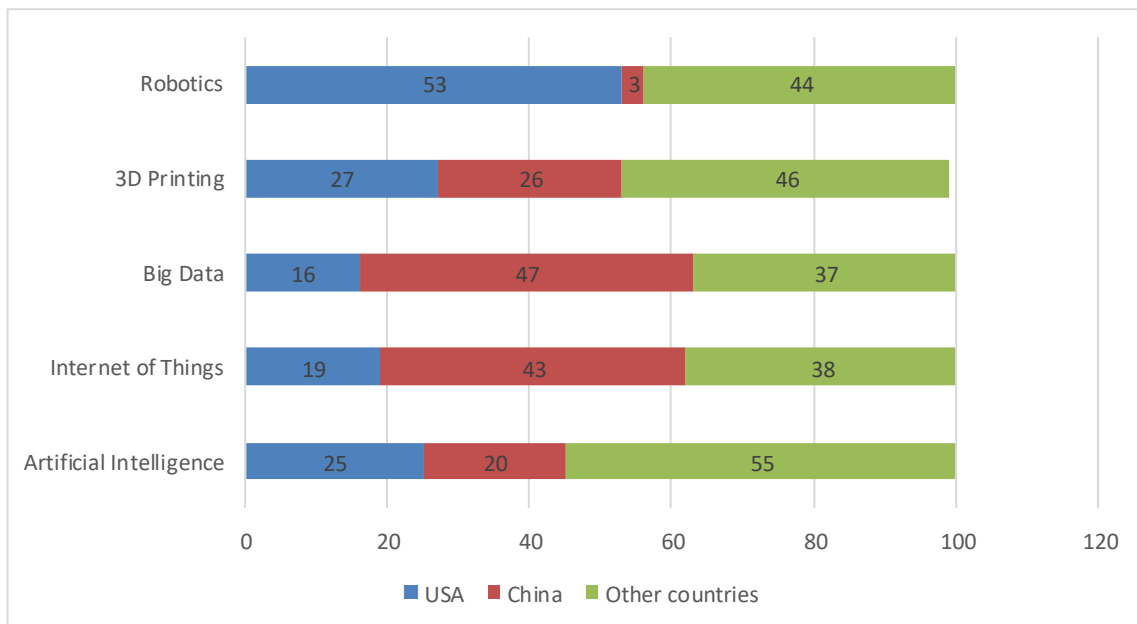
Realizing the danger of the current situation, in May 2021, the UN Commission on Science and Technology - initiated the theme of the session "Industry 4.0 for inclusive development". Along with the prospects and benefits that future technologies bring, the issues of uneven distribution of transformation processes and the need to develop new policies in developing countries in order to take advantage of Industry 4.0 while minimizing possible negative consequences were raised. At the same time, noting that the international community has an important role to play in creating the necessary conditions. Issues such as: the direction of government programs related to the opportunities of Industrialization 4.0 and enhanced opportunities for each member of society, the relationship between countries and the possibility of cooperation in the direction of combating inequality, and others were explored.

Already today there is a large difference in the standard of living of countries, with the average per capita income gap between developed and developing countries being more than \$40,000 (UNCTAD, 2021a).

Comparing global indicators regarding the development of processes associated with the Fourth Industrial Revolution, we note that in this context, the leadership belongs to a relatively small number of countries. The first positions in many indicators belong to the United States and China.

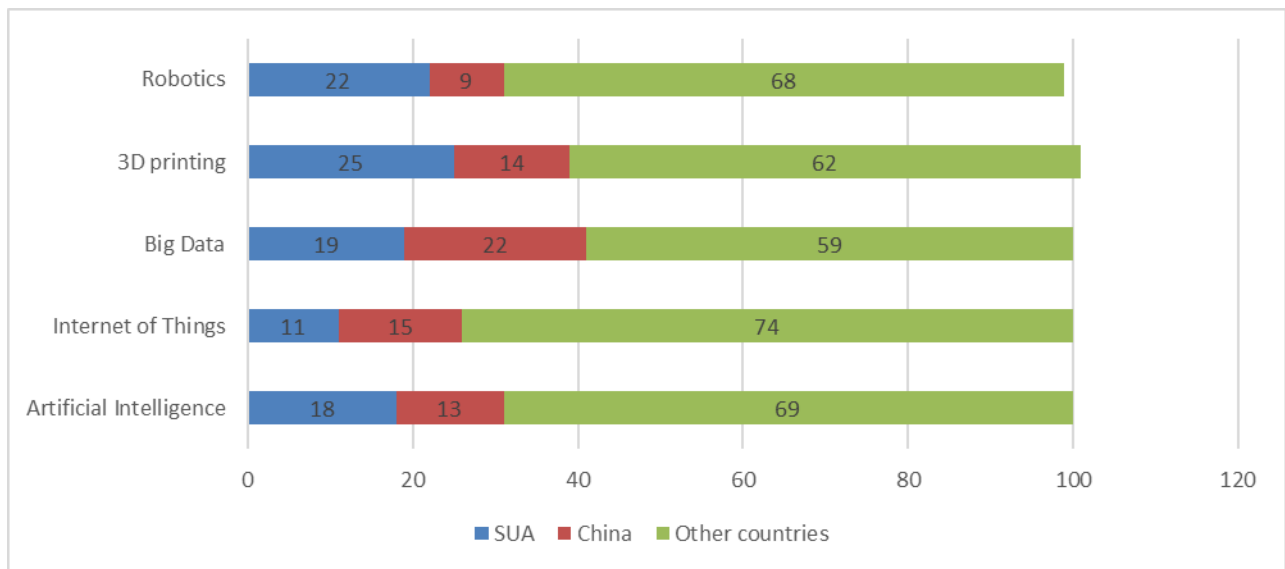
The Economic and Social Council of the United Nations cites the following figures that testify to the leadership of these countries (figures 1 and 2 clearly demonstrate these indicators):

- *dominance by the number of publications and patents:*
  - ✓ about 26-41% of the global number of publications;
  - ✓ 45-63% of the global number of patents;
- *leadership in investment and potential in the field of Industry 4.0 technologies:*
  - ✓ countries of origin of the largest digital platforms;
  - ✓ 90% market capitalization,
  - ✓ half of the world's hyperscale data centers,
  - ✓ the highest rates of implementation of fifth generation networks (more than 45%),
  - ✓ 94% of all AI startup funding over the past five years, employing 70% of the world's top AI scientists.



**Figure 1 Distribution of the number of patents by the main technologies of Industrialization 4.0 among the leading countries for 2021 (in % in the global context)**

Source: UNCTAD, 2021 (<https://unctad.org>)



**Figure 2 Distribution of the number of publications in the field of Industrialization 4.0 technologies by leading countries for 2021 (in % of the world number)**

Source: UNCTAD, 2021 (<https://unctad.org>)

At the same time, as analysts specify, it is not fully determined whether China and the United States will extend their advantages in the field of digital platforms to Industry 4.0 technologies in manufacturing. The most important technology in this regard is the Internet of Things. Western European companies have invested heavily in this technology and, along with China and the US, account for about three-quarters of all IoT spending. That is, leadership here also belongs to a small category of countries.

One of the indicators characterizing the potential for introducing the latest technologies is the level of Internet coverage in the country and the number of users. So, as of January 2022, China ranked first among the countries with the largest number of Internet users in the world. The world's most populous country had 1.02 billion internet users, three times as many as the third-largest United States with about 307 million internet users.

According to a recent report provided by Statista as of April 2022, there were five billion Internet users worldwide. However, there are sharp differences in the distribution of users across regions: East Asia has 1.16 billion Internet users, while Africa and the Middle East have fewer users.

China ranks first on this list of countries with the most internet users. Thanks to constant and rapid economic development, as well as a cultural bent for technology, more than a billion of China's roughly 1.4 billion people are online. Some of the other notable emerging markets are India, which is projected to have 1.134 billion internet users by 2025.

Since 2014, the European Commission has developed the Digital Economy and Society Index (DESI), which summarizes the digital performance indicators of Europe and tracks the progress of the EU countries. In this way, the European Commission monitors the digital progress of the Member States through the Index reports. Each year, DESI reflects digital country profiles that assist Member States in identifying areas requiring priority action. The index is calculated as a weighted average of the five main DESI parameters with weights selected by the user:

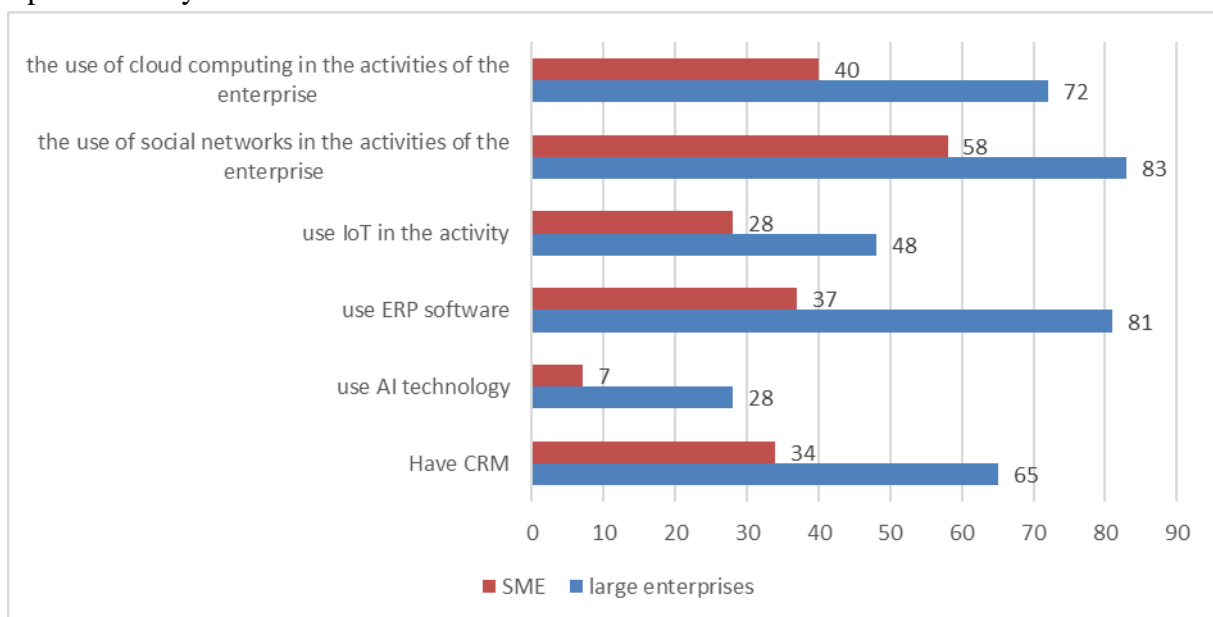
- ✓ Connectivity,

- ✓ Human capital,
- ✓ Integration of digital technology,
- ✓ Digital public services.

As of 2021, EU member states are reducing part of the funds for digitalization processes (about 127 billion euros). At the same time, within the EU, the leading countries in the introduction of advanced technologies and those that occupy the last positions stand out. Thus, the seven countries that directed more than 30% of their funds to digitalization processes are Austria, Germany, Luxembourg, Ireland and Lithuania. Among the countries occupying the lower positions of the ranking are Bulgaria, Greece and Romania.

In the context of the study of intra-country inequality, it should be noted that, according to studies by the European Commission, in 2021 only 55% of SMEs reached the minimum level of digital development in the EU as a whole. At the same time, the most developed EU countries - Sweden and Finland - have the most technically developed SMEs (their number is 86 and 82%, respectively, among the total number of SMEs). However, Romania and Bulgaria represent the lowest rates of SME digitalization. According to the European Program developed for this decade (until 2030), the percentage of SMEs with a basic level of digital intensity should be 90%.

The gap in the adoption of new technologies by large and SMEs is also visible from the data provided by the European Commission. Some parameters of this study are presented in Figure 3 of the present study.



**Figure 3 Differences in the implementation of Industrialization 4.0 technologies in EU countries between large enterprises and SMEs (% of enterprises)**

Source: Eurostat, European Union survey on ICT usage and e-commerce in enterprises

### 3 SPECIFIC ACTIVITIES OF SMEs IN THE REPUBLIC OF MOLDOVA

Considering that SMEs play a huge role in the Moldovan economy, it is extremely important to take into account the specifics of this sector in a period of transformational changes. The key role of SMEs in the Republic of Moldova is evidenced, first of all, by their share in the total number of enterprises, so according to the National Bureau of Statistics, at the end of 2021, the

number of small and medium-sized enterprises amounted to 59.4 thousand enterprises and is about 98.4% of total number of enterprises.

According to the latest surveys presented on the website of the Enterprise Development Organization (ODA – Organizația pentru dezvoltarea antreprenoriatului, formerly ODIMM), 80.7% of households have provided access to the Internet and less than 17% of SMEs have successfully integrated digital technologies into their activities, which represents an untapped potential for SMEs in the Republic of Moldova, and makes it necessary to urgently take the necessary measures for digitization.

Taking this into account, in March 2022, the Decree of the Government of the Republic of Moldova No. 129 of 03/02/2022 On Approving the Digital Transformation Program for Small and Medium Enterprises was issued, published on 03/11/2022 in Monitorul oficial No. 68-71 art. 176, which specifies the Digital Transformation Program and Implementation Plan for SMEs and the responsibility lies with ODIMM (now ODA).

The main guidelines of the program are:

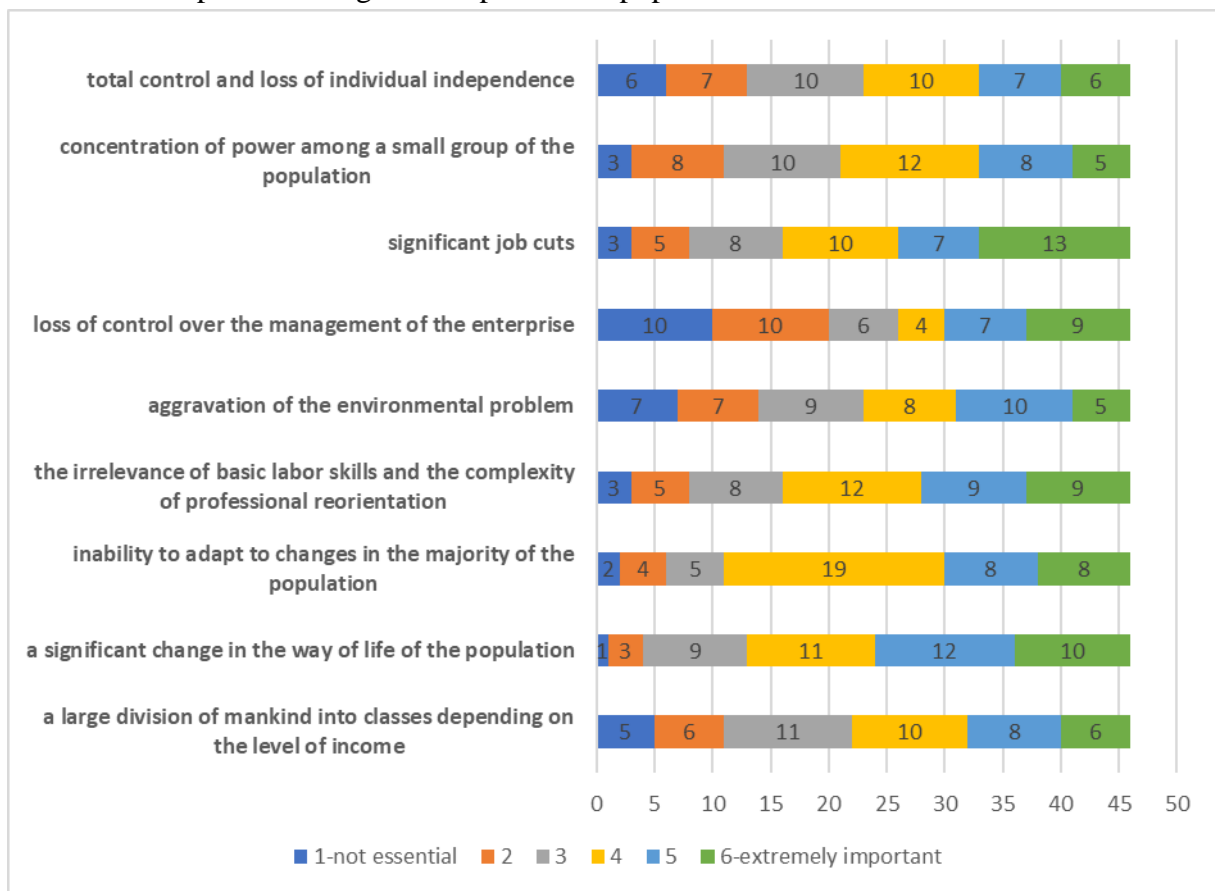
- Developing the skills of entrepreneurs to plan and implement business practices that contribute to digital transformation (at least 40% of beneficiaries);
- Providing financial support for the implementation of digital transformation plans (for at least 150 SMEs);
- Increasing the competitive advantage and client portfolio of SMEs (by at least 20%);
- Development of e-commerce, reduction of physical currency turnover, development of courier services (for at least 20% of beneficiary companies).

In addition, at the end of 2022, a new Digital Transformation Strategy of the Republic of Moldova for 2023-2030 will be adopted. Experts identify the following main problems, identified through consultations with stakeholders, that stand in the way of the planned transformations:

- slow growth of innovative companies,
- lack of venture capital, low level of cooperation between enterprises and universities,
- insufficient technological preparation (number and sophistication of 5G routes, auction plans for 5G spectrum, etc.),
- insufficient adaptation of the regulatory framework to digital business models,
- mismatch of skills;
- shortage of qualified labor force in industry, central government bodies and especially local public administration bodies,
- low level of digital skills and awareness of the population,
- resistance to changes of civil servants,
- lack of financial resources,
- low investment in ICT in agricultural SMEs,
- low involvement of local companies in government-funded projects,
- insufficient motivation of civil servants in the final results;
- insufficient presence of scientific research in the development and monitoring of policies aimed at the development of the information society.

As can be seen from the listed problems associated with the transformation of national enterprises, social issues can be traced in almost every point. The results of the study carried out in the framework of writing this paper also testify to the priority of social issues in the implementation of the processes of change in Moldovan SMEs.

The study was conducted in January-February 2022, in which employees of enterprises participated (46 enterprises in total). So, among the main social problems, respondents identify: a significant reduction in jobs, the inability to adapt to changes in the majority of the population, the discrepancy between basic work skills and current professions, the loss of individual independence as a result of total control associated with the use of the latest technologies, the concentration of power among a small part of the population and other.



**Figure 4 The main social problems of SMEs in the process of changes associated with Industrialization 4.0, identified by respondents in the course of the study**

Source: own work/ based on the results of the study

Thus, Figure 4 clearly shows how employees of companies assess social problems, provocations and risks associated with transformational changes. Estimated values are put down in accordance with the importance of the factor, in ascending order: from 1 - the influence is not significant, to 6 - extremely significant). As can be seen, the understandings of the respondents correspond to the ideas of the classics presented in the theoretical part of the work.



#### 4 CONCLUSION

Taking into account all the above factors and those directions of state and international strategies, as well as the extreme importance of the participation of the SME sector in Moldova in all transformation processes, we can confidently say that the most important part of the strategy, both at the macro and micro levels, is the social orientation.

The significance of the presented theoretical studies, strategic guidelines and problems identified by the respondents show unambiguity in understanding the sounded problem. It should be noted that along with the challenges and dangers, Industrialization 4.0 can bring many benefits to humanity, given the correct path chosen.

Playing a priority role in the economy of the Republic of Moldova, SMEs need to take the path of renewal. The situation, worsened by external factors in recent times, further undermines the competitiveness of this sector. But, at the same time, it should be noted the opportunities associated with greater adaptability, speed in making and disseminating decisions and the development of creativity in such companies.

At the same time, the opportunities associated with government-led programs should enhance the ability of SMEs to overcome obstacles and embark on the path of transformation associated with new technologies. Here, it is necessary to remember that in any enterprise the first priority is the management component (that is, rethinking activities, planning, organizing changes), and then the use of technology.

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