

# Comparative Analysis between Organizational Change and Institutional Change within the Society in the Advent of the 4th Industrial Revolution

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## Abstract

*The Fourth Industrial Revolution, Industry 4.0 and the rising of smart factories and industry automation, are among the most discussed issues today, both in organizations and in public institutions. Fast implementation of new technologies will fundamentally transform the future of work, imposing companies and public institutions, as well as social structures to adapt accordingly in order to guarantee further economic growth and development.*

*The main objective of the proposed research is to make a theoretical overview and comparative analysis of organizational and institutional change. Better understanding of the similarities and differences between both concepts will provide meaningful insights of the main processes and factors of change. While organizational change is a function of the company management decisions in response to environmental conditions, institutional transformation affects more fundamental social processes. Therefore, the present research will propose a conceptual framework for analyzing organizational and institutional change in the context of technology transformation, focusing on the main reason for change - digital disruption technologies. Finally, the paper will present some of the outcomes of empirical research about digitalization of SMEs in Bulgaria and their readiness for transforming and digitizing their business models.*

**Keywords:** Organizational change, Institutional change, Socioeconomic challenges

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## I. Introduction

Disruptive technologies are gradually changing our society, provoking economic shifts and requiring companies and public institutions to adjust and to adapt. The Fourth Industrial revolution, as defined by Schwab (Schwab, 2015) will be the next level of social transformation, led by the change of the technological paradigm. Moreover, the Fourth Industrial Revolution has the potential to raise the global income levels and to improve the quality of life for the people around the world (Schwab, 2015) and will have a systematic influence in every industry and in every country, as the system transformation will affect the whole process of production, management and societal organization, generating the development of self-regulating systems.

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Technologies largely contribute to improve people's life, as they deliver new products and services that increase the efficiency, lower transportation costs, transaction costs and communication costs, optimize logistics and global supply chains, provide long-term gains in efficiency and productivity. However, one of the biggest challenges today comes from the raising inequality levels and the shrinking middle class. Many economists and researchers warn that the wide adoption of smart technology solutions can further shrink the labor markets demands (Frey & Osborne, 2013), (Autor & Dorn, 2013). With new disruptive technologies, autonomous systems, cognitive computing and robots, companies will need less or no workers for its production or service-delivering facilities. Many authors fear that the labor market dynamics will be dramatic, and the loss of jobs will affect both low-skill and highly-skilled professionals (Rotman, 2015). However, as it happened in the past, new professions will emerge, but many observers fear that the rising levels of inequality and the global wealth distribution may further threaten sustainable development.

While companies need to lead the change in order to remain competitive on the global market producing more intelligent and smart, functional and complex products and services, the overall economic ecosystem has to respond adequately on these trends, as companies' success is interrelated with institutions and public organizations transformation. The organizations have to reshape their business models, reorganizing value-offering, value co-creation, improving customization and user involvement, enhancing value-in-use and self-service, increasing customer experiences and customer satisfaction. However, public institutions need to transform as well, as the new disruptive technologies will lead to institutional transformation, as they will become the main driver for ecosystem development requiring new system rules and shifts in paradigms.

The present research aims to make a comparative analysis between theoretical concepts for organizational and institutional change. Our interest is provoked by the next coming shifts in technologies and the following challenges on organizational, institutional and social level. On the one hand, organizational change is about preparing organizations to adapt and to develop new business models, services and products, customizing processes such as planning, business chain configurations, orders and transactions automation, customer-oriented design and production. On the other hand, institutional change is about adopting new rules that should ensure more smooth transformation processes on the labor market and on the social systems, tackling with rising issues such as social disintegration, inequality, and emergence of new jobs.

The paper is organized as follows. The first part provides a theoretical overview of institutional and organizational change and its main characteristics according to the literature. The second part will develop a framework for making comparative analysis, based on the system analysis approach (social systems). The last part will provide an empirical research and interviews with 6 Bulgarian SMEs, discussing and analyzing their readiness for digital transformation. In the conclusion section there will be outlined the main findings and recommendations.

## II. Theoretical review

### **Institutions and institutional change**

Institutions can be generally defined as complex social structures. Many scholars use the term institutions to designate both their evolution and functioning as complex socio-politico-economic and cultural phenomena. Institutions can be formal and informal and their role is to regulate the social interactions or the relationships between any individual with and between any social groups of people (Commons, 1924). From a very small human group, representing the family, to more complex social, political and economic groups, institutions shape the society and define individual choices, individual behavior and therefore individual life. Thus we can state that institutions determine social rules and orders that influence and shape the individual ones. As North states, institutions define “the rules of the game” (North, 1990).

Thus, in general, institutions can be defined by the capacity of setting rules and designating the roles and functions of individuals and organizations within a social group.

In literature there can be found some popular definitions of institutions as: “it’s collective action in control of individual action” (Commons, 1924). An institution is, rather, the expectation of actors to conform to it, regardless of what they would want to do on their own. Moreover, such expectations are held, not just by actors directly affected by the expected behavior, but by “society” as a whole (Streeck & Thalen, 2005).

Parto (Parto, 2005) makes a summary of Scott’s findings (Scott, 2001) that institutions collectively act as an integrated web running through different systems (e.g., social, economic), scales of governance and levels of inter-relations. In addition, institutions are at once persistent, resistant to change while capable of changing in evolutionary time, and are transmitted through various means to consecutive generations, thus providing a certain degree of continuity, stability, and security.

One of the main difficulties for analyzing institutions comes from the fact that institutions include a large set of organizations, complex social groups and even social norms and expectations (Chavance, 2001). Therefore, it is very challenging to make a general analysis of different rules, characteristics and interdependences that control institutions on different levels.

The main question of institutional theories is not how institutions stabilize themselves in a static state, but how they endlessly grow and change (Hodgson, 1988). Institutional change in general is due to two main reasons:” institutional change is mainly due to changes in the relative prices or changes in the taste or preferences” (North, 1990). Further institutional change occurs when an existing set of beliefs, norms, and practices comes under attack, undergoes delegitimation, or falls into disuse, and needs to be replaced by new rules, forms, and scripts (Scott, 2001). As both formal and informal institutions serve as an instrument to decrease individual/organizational transaction costs, the effective institutions can lead to the increase of the national income as they reduce insecurity and allow cooperative strategies for

action (Sedlarski, 2013). Finally, institutions are stable structures, even though subject to perpetual changes.

### **Organizations and organizational change**

While a firm or an organization is a formal socioeconomic system, or a type of institution, in our research we will analyze it not as an actor “setting the rules”, but as an actor “obeying to the rules”, set by the society, by the legal framework and the general business environment.

An organization is a collection of people working together in a coordinated and structured fashion to achieve one or more goals. Some of the society’s needs that are met by organizations in order to exist, include the need to achieve desired goals and the need to have better administration and specialized task or job (PEOI, 2016).

Organizational change, by definition, is a transformation of an organization or a firm between two points in time (Barnett & Carroll, 1995). For the purpose of our work, we will accept as a working definition a more precise look: “organizational change represents the action, the set of actions, a process through which it seeks a partial or a total transformation of an organization, enabling the transition from a current state to a future desired one, which differs quantitatively and/or qualitatively from the first” (Bradutanu, 2012). The term organizational change management is about reviewing and modifying management structures and business processes. It is a recognized discipline that helps businesses and organizations adapt to fluid circumstances. This discipline considers who may be impacted by the change and how, and addresses a wide range of business elements, including organizational design, roles and responsibilities, performance standards, workflow and processes.

The goal of organizational change management is two-fold:

- On the one hand, to help organizations successfully make the transition to new circumstances (e.g., new market entry, new corporate model for acquisitions or mergers, new regulatory climate, new company goals, new technology, etc.).
- On the other hand, to help the company to learn how to become more flexible and adaptable, to better control and respond to the future changes.

There is also another side of the goals of organizational change management. A successful model for organizational change prescribes steps the company must take to implement change (e.g. checklist or tasks). But it goes beyond process into “softer” elements that focus on how employees adapt. Organizational change management professionals point out that implementing a new technology, process, or rule from the top-down is not the same as convincing employees to embrace it. In fact, employees who resist the change—even as they perform the new tasks or follow the new rules—can negatively impact the success of any project. Thus, another goal of organizational change management is to create an environment of supporting the change (Stadtmueller, 2014).

According to the vast research conducted on organizational change, in most contexts, both content and process factors ought to be evaluated. Process refers to how change occurs. Content describes what actually changes in the organization.

Analyzing organizational change, it will be useful to consider the threefold framework: why-what-how (Dainty & Kakabadse, 1990).

<u>The why of change?</u>	<u>The what of change?</u>	<u>The how of change?</u>
- why change at all, why there is a need for a change / transformation - driving forces of change - the preconditions of change	- what is it that is changed - what type of organizational change: a new product, an expansion, an adoption process of a new technology, etc.	- how change is brought about in terms of the overall process, style and methods used – stages, scale, timing and process characteristics.

**Table 1:** Types of changes in an organization

<i>Type of change</i>	<i>Characteristic</i>	<i>Impact</i>
Downsizing/ mergers/ acquisitions - process change	Predictable managerial response in certain circumstances	Major/minor
Technology-driven innovation	New technology adoption;	Major/minor
New products or services	Renewal of the product range; a new service or performing in a better way the same service – performance, quality	Major/minor
Structural change	Restructuring/rearranging people/change in the relationships; adding/deleting knowledge and qualifications	Major/minor

Thus, all the above questions turn out to be also a good basis for setting criteria for measuring organizational change.

### III. Conceptual comparative analysis

#### **Mutual dependencies between organizational, institutional and societal change**

Analyzing the processes in the hierarchy of rules, Chavance (Chavance, 2001) defines that in a stable situation, individual behavior is determined by organizational and institutional frameworks, organizations are formed and evolve within the institutional framework, and institutions are established and stabilized within the system, i.e. with a configuration of general rules. This means that when the environment is stable and predictable, institutions largely influence the social and individual development. On the contrary, in the evolutionary process, the rules act on the opposite direction. The modification of individual and collective behavior leads to organizational or institutional change, further transforming organizational actions, leading to changes in the institutional framework, and institutional mutations cause the evolution, or the transformation of the economic system. And finally, in the situation of a social transformation, the change in social beliefs leads to transformation in the institutional framework, affecting organizations, thus policies and in the end – economic results.

Further North (North, 1990) underlines that organizations and mainly “entrepreneurial undertakings” are among the main factors and agents provoking institutional change. Thus, institutional transformation depends on the capacity of organizations to lead and undertake entrepreneurial projects. As Vladimirov et al. (Vladimirov, Davidkov, & Yordanova, 2017) empirically proved, both formal and informal institutions influence organizational growth perspectives.

## **Methodology**

Our methodology includes General System Theory (GST) and the conceptual background of ORGAN (Wester-Ebbinghaus, 2010), using the concept of the system components. ORGAN contains four levels (Society – Market – Organization – Departments). The first level is called society – this is a system in some sense; the next one is the market or the organizational field. In the market, which is a platform, there are rules and certain behavior, in which the companies perform their business. The entities on the market level are organizations, on the third level. Then we have departments. A department consists of several agents.

The GST defines a systematic approach, including ten principles (Bertalanffy, 1974):

1. Interconnection and interdependency between objects and their attributes: independent elements cannot represent a system.
2. Holism – the system is studied as a whole, it is not divided or analyzed on its own.
3. Pursuit of purpose – system interdependencies need to lead to a purpose or a stable situation.
4. Input and output elements – while in a closed system the input elements are determined and constant, in an open system new elements from the environment can affect the system.
5. Transformation of the input element into output elements – this is a process, through which the desired goals are accomplished.
6. Entropy – the sum of random variables or chaos, that exists in every system.
7. Regulation – a method, which provides feedback, necessary for the system in order to function predictably.
8. Hierarchy – complex systems consists of subsystems – or system of systems.
9. Differentiation – specialized units, performing specialized functions and roles.
10. Equifinality – alternative approaches for accomplishing the same goals (conversion).

## **Defining the roles of institutions and organizations (influence over the system)**

In order to compare institutional change and organizational change, first we need to define the respective roles of organizations and institutions within the society. In a broader aspect, institutions can be defined as “the rules of the game”, as determined by North (North, 1990), then organizations are “the players”. The role of institutions is to set the rules and systems for application of the rules. Institutions are the conceptual framework for the organizations. Organizations, respectively, exist to allow accomplishment of work that could not be achieved by individuals alone. And when the goals of organizations are in alliance with the society, they can contribute to the society (PEOI, 2016).

As institutions constitute the fabric of the society, they shape further individual, group and social interactions through various set of rules. The rule can be generally defined as a prescription or ban for social action in certain circumstances,

accompanied by sanctions or rewards (real or symbolic) (Chavance, 2001). Institutional rules differ from organizational rules, in that they subordinate them. Working rules guarantee that the group performs the actions as expected, setting specific rules for individuals what they can do and what they cannot do. Thus, all institutions take part in defining some rules for expected social behavior and social norms. There is a specified hierarchy of rules that include four general levels – economic system, formal institutions, organizations, and finally individual behavior (Chavance, 2001).

### **Identifying relevant parts (elements) of the society which are influenced or influence organizations and institutions**

In the frameworks of the current systematic approach, we should keep in mind the following characteristics of the social system:

1. Social systems are complex mutual dependencies, consisting of elements which evolve with the complexity of the environment. In this respect, it is crucial that the elements of the socio-economic systems are well determined, as well as the respective dependencies.
2. The main factors for change come from outside of the limits of the system, when having transformational processes.
3. Organizational systems evolve into complex socio-economic systems.
4. The elements of both organizations and institutions include: people; culture; business processes; technological level/applications; end users.

Other parts of the system are the following:

- Resources (money; people; input resources)
- Environment (the context)
- Output (institutions – rules; organizations – products and services)
- Events – information, data

There are inside relationships - inside of the society, every actor is related to the others and this induces some processes.

### **Identifying the main change process of the Fourth Industrial Revolution**

The context of the Fourth Industrial Revolution is the global technological and innovation-infused environment that can be characterized by the process of systematic increase of flexibility of the production models and processes, through automation and extensive networks and mechanisms for decentralized management. The scale and magnitude of the Fourth Industrial Revolution, as well as its complexity, is what makes it different from the previous ones.

How industrial revolutions affect organizational and institutional change in a history perspective is the main question of interest. Since the emergence of the First Industrial Revolution, historians have shown that crucial shifts in firm organizations coincide with the industrial revolutions (Kapas, 2008). Kapas describes the evolution of the organization from the rise of the factory in the First (British) Industrial Revolution, replacing the putting-out system that was based on the “family firm”

craft-shop, through the multidivisional form of organization of the large enterprises in the Second Industrial Revolution. The following ICT revolution results in another important shift in firm organization: large vertically integrated firms are becoming flatter, decentralized and organized in semi-autonomous and globally dispersed project-based teams.

During that time, institutional changes were also observed. The technological inventions in the First Industrial Revolution were supported mainly by informal institutions, although there was a favorable congruence in all subsystems of the society and their positive mutual interconnection. The effect on institutions of the following multidivisional form of organization was the creation of a new set of rules, in accordance with the vertical integration of organizations, including antitrust law and other regulatory laws. The Third Industrial Revolution brings a new institutional change, supporting the globalization of the markets, the fall of the cost of information and reduction of barriers to entry. The Fourth Industrial revolution is expected to change the future of work and the structure of labor, leading to more self-employed, project-based work, start-ups and freelancers.

### **Recommendation system framework – conceptual framework for institutions and organizations**

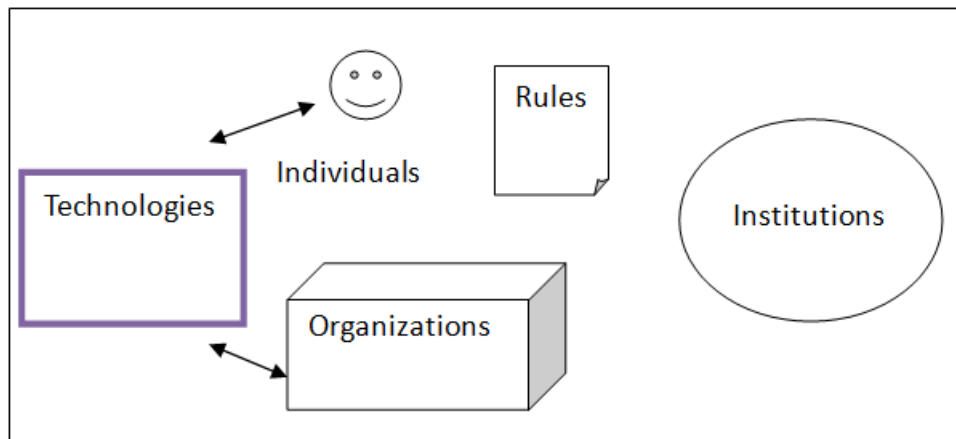
Identifying criteria for comparative analysis includes identifying the factors for change (for instance, internal or external – technology; HR turnover; industry of operation) for both organizations and institutions; the setup of change and openness to global market; what source of access to resources organizations and institutions have.

**Table 2.** Comparison between organizational and institutional change

	<i>Organizations</i>	<i>Institutions</i>
Factors for change	Changes in the competitors' environment – resources, competition, demand and supply  Preferences changes (new substitutes)  Change in the technological environment (affecting production models) – leading external agent of change for organizations	Change of the rules  New rules occurrence  Rules fall out  Change of the methods for setting rules  Change in the technological environment – consequent impact over the institutional environment
Setup of change	Changes are considered as strategic development models and are executed upside-down.	Changes are induced outside-in.
Access to resources	In the framework of the organization	In the framework of the system

While new technologies affect to a greater extend the organizational change and business organizations, most of the formal and informal institutions (meaning the general framework of rules) are not influenced significantly, neither are their future activity perspectives. However, we have to admit that, as the use of new technologies will change organizational processes, this will affect human behavior and thus institutional change. Since institutions (formal and informal) are influenced by employees, end users, as well as communities, they are indirectly influenced by technologies, thus setting the new “rules of the game” for organizations (Picture 1).





**Picture 1.** Conceptual framework for institutions and organizations

#### IV. Discussion

##### The context of Digital transformation

The effect of the context of the new technological developments can be described two-fold: on organizational level and on institutional level. On the other hand, wider adoption of new technologies will substantially change the patterns of wealth production and wealth distribution, making the existing rules obsolete and threatening social equilibrium.

Following our analysis and in support of the claim of North (North, 1990), we can conclude that business organizations and business companies are the main triggers of social change and institutional transformation. On the one hand, companies constantly deliver more sophisticated disruption technologies and innovations, but on the other hand – they are increasingly threatened from global competition and from even more disruptive technologies coming from other sectors. Thus companies and business structures are naturally motivated to lead the competition, accumulate power and resources both to request more general institutional change (following the cycle of Chavance (Chavance, 2001)) and to influence individuals' behavior and cognitive schemes.

While institutions determine the capacity of the economy for production of wealth, their roles and positions are “pre-defined” in the previous industrial economy, which has a different socio-technical context. As Sedlarski (Sedlarski, 2013) points out, institutions not only influence the general “rules of the game” but they directly affect the price of the key factors of production, as for example labor (minimal wage), land, capital, key resources and entrepreneurial skills. Further, as Vladimirov et al. (Vladimirov, Davidkov, & Yordanova, 2017) proved, institutions have the capacity to predefine organizational perspectives for growth and prosperity. Defining the local prices of the key economic resources is becoming obsolete in the global economy, as global competition, both for markets as well as for resources, will further exercise its role. Moreover, as production and service function will become further automated and excelled, transaction sector in the world economy will continue to expand. In these realms, the production of wealth will not depend on human labor or access to land or capital, as it will be further automated. The declined need for human labor will result

in less employment and lower incomes from salaries, leading to decreased level of social payments as social security, pensions, healthcare payments and others taxes from personal income. Thus public institutions need to get ready both for reduced income from salaries, and for more flexible labor organization forms, combining different incomes from temporary sources (freelancers, micro-entrepreneurship, part-time working, non-for-profit working, temporary contracts and many others). Therefore, public institutions need to prepare for better adapted personalized services and for flexible working patterns, allowing more individuals to fully engage in the new economy potentials.

The second fundamental question for institutions will be to define the ways of wealth distribution, as social inequality and wealth distribution become one of the crucial problems nowadays. Highly volatile companies succeed to substantially reduce tax payments, registering in tax heavens or using some power-related instruments to influence policy makers and social institutions. Thus institutions will need to adopt new types of “rules” and new ways to finance the increased transaction sector and public services (education, healthcare, social security, etc.). As labor costs will lose the function of a wealth distributor, other types of social contracts need to be accepted to reevaluate how new generated wealth, produced by new “smart machines” will reach the end-users. Picketty (Picketty, 2015) claims that the history of distribution of wealth has always been deeply political, and it cannot be reduced to purely economic mechanisms, as it is shaped by the way economic, social, and political actors view what is just and what is not. Thus inequality is a political concept of the relative power of those actors and the collective choices that result (Picketty, 2015). In a situation of reduced labor demand and shrinking social funds, the problem of wealth inequality will raise many new questions for wealth distribution in the future society. Therefore, even if new technologies can bring substantial growth for the global economy (some projections range between 3 to 5 times for the next decades to come (Credit Swiss Research Institute, 2015)), this will not create automatically better societies and better institutions. Even more, existing economic development further threatens not only social cohesion, but as well the other pillars of the sustainable development (environmental, economic and social), leading to more serious problems for the next generations.

### **The case of Bulgarian companies**

Based on the analysis made, we considered companies and business organizations as the main drivers of social and institutional change. Therefore, one of the crucial questions today is how companies and especially SMEs will manage the path towards digital transformation. Furthermore, the success of the company’s digital transformation depends not only on technical factors and sophisticated ICT solutions, but it relies as well on other organizational characteristics beyond IT, such as appropriate company culture, digital-enabled leadership, open communication, willingness to learn, risk-taking attitude, openness to innovation and change management capacity. Thus these “soft” factors depend largely on formal and informal institutions, such as local ecosystem and region specifics, sectors specifics

and the culture of the country. We conducted structured interviews with SMEs that enabled us identify some of the main problems for digitalization of the local SMEs.

Six Bulgarian SMEs were contacted as part of DIGITRANS project “Digital transformation in the Danube region”<sup>1</sup>. The results from the interviews with the Bulgarian SMEs show that all of them had realized that digitalization of their business models is quite relevant, important and pressing issue. The topic of digitalization and business model transformation is considered crucial for building competitive advantage and remaining competitive on the local and on the international market for all of the organizations. However, only two of the companies have specific strategies about how to digitalize their business models. The overall understanding of the topic is not very high and the steps and actions how to start the digitalization “journey” and processes are not clear at all.

Furthermore, it is important to mention, that all hierarchy levels, managers and owners are directly involved in the digital transformation processes. This comes to prove that SMEs managers are fully aware of the crucial role that the digital transformation has to play. Although all of the SMEs stated that business model digitalization is important for their future development, in general they lack comprehensive understanding about the basic concepts how their digital business model should look like. The main difficulties and obstacles for company digitalization are not technology, but human related and organizational factors. Therefore, informal institutions – beliefs, attitudes and assumptions play crucial role for company digitalization.

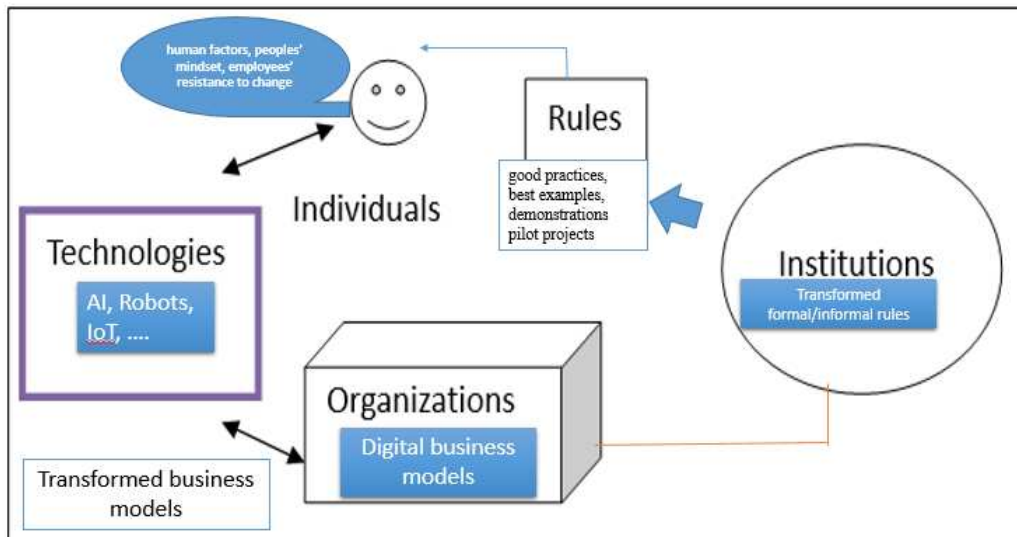
As the SMEs revealed in their interviews, some of the main obstacles for business model digitalization are: human factors, peoples’ mindset, employees’ resistance to change, lack of relevant knowledge and good practices, lack of adequate resources, lack of motivation to take risks.

Currently the impact of the digitalization on the business is very low, but the potential for the SMEs is enormous. Thus many of the SMEs representatives highlighted how important is to communicate good practices, best examples, demonstrations and pilot projects. They assumed that the impact of the business model digitization will lead to faster business processes, quality improvement, customized services and complex solutions that can lead to stronger competitive advantages.

Thus companies are aware and understand very well that they could use the digitalization to restructure their whole business model and to upgrade the business on a new competitive business level. This is critical for all companies and especially in highly competitive sectors, such as electro mobile business and laser technologies, as well as IT/Internet services to develop very fast and the competition is world-wide. On the other hand, healthcare is expected to be one of the most digitally transformed sectors in the near future and the Bulgarian SMEs are aware of these trends. On picture 2 there are identified the main models that have to be addressed for organizational and institutional change during the next industrial revolution.

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<sup>1</sup> <http://www.interreg-danube.eu/approved-projects/digitrans>



**Picture 2.** Models of spread of organizational and institutional change, following the adoption of new technologies;

The interviews with Bulgarian SMEs' representatives provided meaningful information and feedback about the current state-of-the-art in digitization and mainly the SMEs attitudes towards training in the field of Digital transformation. Based on our conversations and discussions with interviewees, we understood better their knowledge, attitudes and experiences on the topic of the digital business models, and we assessed better their motivation and their strategies on it.

## V. Conclusion and outlook

While organizational change is well discussed as microeconomics problem and as a function of the planned activity of one company, institutional change is a much broader area and imposes many difficult questions. In order to make the next Fourth Industrial Revolution not so disruptive and to be prepared for the changes imposed by the new technological environment, organizations, institutions and the society need to address the main factors of change.

Changing informal institutions is crucial for further organizational change and company digitalization strategy. Changing formal institutions could also play a leading role for the next industrial revolution.

For this reason, our research presented a conceptual framework for analyzing organizational and institutional change in the context of technology transformation and surviving the digital disruption during the Fourth Industrial Revolution. Having a better understanding of the underlying processes and factors of organizational and institutional change will help understanding and expecting the future capacity for development. The outlook for future research in the field of organizational change management and institutional research is further factor analysis and modeling of organizational and institutional change.

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