

INDUSTRY 4.0: TRANSFORMING ECONOMY THROUGH VALUE ADDED



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ABSTRACT

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The article presents the changes that innovations of industrial revolutions have provoked in manufacturing technologies and economic structural and functional relationships. It is concluded that every major industrial revolution (for example, the First and Third Revolutions) was followed by a subsequent technical revolution (respectively, the Second and Fourth Revolutions), which expands the innovation business potential and determines a new pathway for the economic theory development. The deployment of the technological achievements of the Information Revolution provokes the emergence of the digital revolution – Industry 4.0. Due to added value, the digitalization brings out the economic relations into a quality new dimension and transforms economic theory, business models and competitive environment. The high-technological digital environment of the Industry 4.0 achieves simultaneous horizontal and vertical integration and automation of the value chain and value added chain. In the conditions of respecting the requirements of eco-design and clean production, Industry 4.0 involves consumer into the production process and overcomes the scarcity of resources and goods. In this digital high-technological environment, marginal utility theory loses her actuality. The transformations of economic structure and relationships in Industry 4.0 focus on innovations and increase in value added.

Contribution/ Originality: This study contributes in the existing literature with a retrospective analysis of changes in economic theory and practice provoked by industrial revolutions. Thus, the article argues the upcoming qualitative transformations in economic theory, business relations, business models and the competitive environment due to value added and Industry 4.0.

1. INTRODUCTION

The production technologies development mark the dynamics of economic change. The innovations are at the heart of the economic and social progress of the humanity.

In the 1940s, Josef Schumpeter proved that, driven by consumer needs and preferences, entrepreneurial creativity introduces rationalizations and innovations in the production process (Schumpeter, 2003) Gradually, innovations disperse across other business sectors. An industrial revolution has emerged.

Until our days, scientific and technological progress has provoked three industrial revolutions that through "creative destruction" have transformed economic theory and business practice (Schumpeter, 2003). The world today faces the challenge of the fourth technological revolution - Industry 4.0. Along with comprehensive digitalization, a key factor in its emergence and development is the intensification of efforts to increase value added not only to the client but also to other stakeholders such as the company, its counterparts and the community. Business strategies focus on increasing the value added that changes the economic theory and practice of micro and macro level.

The aim of present article is to outline the transformations in business practice and economic theory, provoked by the digital-based and increasing value added Industry 4.0. The Fourth Industrial Revolution changes in qualitative terms business relationships and exposes new dimensions and opportunities to business management, competition and consumer satisfaction.

2. RETROSPECTIVE TOUCHES ON THE INDUSTRIAL REVOLUTIONS' ECONOMIC CHANGES

The free market creates an innovation-oriented economy. The innovations are endogenous and system phenomenon (Antonelli, 2016). The manufacturing and business practice progress is the result of rationalizations and innovations. Historically, every new stage in economic development has led to increased opportunities for wealth accumulation, improved production conditions and, ultimately, a higher standard of living.

Scientific and technical thought deployment, provoked by limited production capabilities of the manufactories to satisfy market potential and competitive pressure, led to the First Industrial Revolution at the end of the XVIII c. The crucial innovations of water and steam power transform economic theory and practice. The mechanization of production does not displace manual labor completely, and helps to significantly production costs reduction. In the economy was being born a new industry - the production of machinery. The entrepreneurial initiative quickly spread and implemented the innovations in transport. Energy intensity and resources dependance characterized the industrial production and logistics.

In economic practice, the First Technical Revolution achieved a widespread expansion of industrial capital. It gradually displaced the commercial and interest-bearing capital that dominated the era of mercantilism. The need for strong capital to start up own business stimulated the development of bank credit (see Fisher (1992)).

The joint-stock companies were been recognized as a predominant organizational business form. Around the 80s of the XIX c., as a result of the growing competition, the improvement of production techniques and the increased capital intensity of production, a concentration of industrial capital has been began (see Fisher (1992)).

The First Industrial Revolution changed the standard of living and social policy in advanced countries. Higher labor productivity increased standard of living in conditions of persistent low wages. The social security and the regulation of the working day duration have entered in the social sphere.

The economic science has been dominated by the labor theory of value. At the dawn of the First Industrial Revolution David Ricardo first applied the labor theory of value in the analysis of socio – economic relations, profits, capital, wages, money supply and credit (Ricardo, 2001).

The production intensification and the market expansion provoke the integration of the utility of products in the economic theory. The consumption was gradually becoming a dominant category in market relations. The conditions for growth of national wealth, the improvement and rationalization of business structure and production and the problems of distribution were the priority in economic science (Ricardo, 2001; Mill, 2009).

The need to increasing production in response to expanded consumer demand and competitive pressure to lower production costs has stimulated the next-generation manufacturing processes rationalization and renovation. Thus, in the 70s of the XIX c., the Second Industrial Revolution was born in the most advanced countries. The

application of electric power, the introduction of the assembly lines and the mass production determined the oncoming economic transformations (see Spielvogel (2009)).

The chemical industry, the pharmaceutical industry, synthetics were entering in the structure of economic sectors. In the manufacturing process was achieved the energy consumption reducing.

The concentration of production and capital increased, which led to the monopolization of certain industries. The preferred organizational forms for the production concentration and monopoly are the trust, cartel, trade union and the concern. The symbiosis of industrial and banking capitals formed the financial capital. The capital export took on a large scale. The first multinational companies with subsidiaries in Europe occurred in the United States. Their activity changes the competitive environment in national economies.

The destruction of natural resources, uncontrollable environment pollution and the mass consumption are the negative externalities of increased production capabilities.

The innovations in the manufacturing sphere, mass production and expanded consumer demand lead to a marginal revolution in economic theory. The neoclassicism became a dominant economic paradigm. The subjective economic categories replaced the labor theory of value. Economic knowledge focuses on mathematical study of psychological determinants in the economic units' behavior. Economic analyzes are based on the marginal utility theory and the economic equilibrium theory. At the heart of economic interpretations are the benefit and utility for consumer and the scarcity of goods (Marshall, 2010). The mathematical models of static and dynamic economic equilibrium were created (Walras, 1926; Wickcell, 1977). Inspired by the mass consumption the institutionalism has emerged, as an alternative to the neoclassicism (Veblen, 1922). The main economic development factors are initiative, innovation and entrepreneurs (Schumpeter, 2003).

Technological advances in electronics and deepening manufacturing processes automation provoked the emergence and deployment of the Third Industrial Revolution in the 70s of the XX c. Information and communication technologies (ICT), the Internet and renewable resources have transformed not only manufacturing processes and business practice, but also economic science and people's lifestyles. Improved production automation was rapidly evolving into the electronization and robotization of a number of sectors. Microelectronics and biotechnology were emerging as new areas of the scientific and technological revolution.

The services have occupied an increasing share in the structure of economic sectors. The IT infrastructure construction, the creation of specialized software products and the expansion of Internet capabilities have created many new professions, reveal millions of new highly skilled jobs and discover boundless business opportunities. The intensification of information and communication links has tremendously increased world trade and business activity, provoking the deepening of economic integration between countries and the development of globalization. The e-business and e-market have dominated the structure of economic relations (see Rifkin (2011)).

The free and expanded access to information increased the transparency in economic processes. Expanded scientific and technological capabilities focus the mankind's attention on deepening environmental and social contradictions. The public policy and business practice strengthened the value of sustainable development. The innovations in the field of renewable resources support the production processes sustainability.

Strengthening the role and importance of artificial intelligence validate the mathematical modeling of economic science. Priority spheres of modeling and econometric analysis are the general market equilibrium, economic efficiency in the imperfect competition conditions, the structure and relationships of financial markets, economic growth and social welfare. The sociology and technologization were entering into the economic theory. The neoliberalism, contractual relations, environmental protection and the welfare determine the modern economic science development direction.

Marked by strong state investment in high-technological researches and education, the Information Revolution approves the role of public-private partnerships and project management in business practice.

The intensive ICT development towards smart solutions for business management, production, supply and delivery chains determine growth in the era of private and public sectors digitalization. Technological innovations in the direction of comprehensive digitization and the sustainability onset lay the foundations of the Fourth Technical Revolution, called Industry 4.0. In light of the idea and efforts to increase the customer value added, Industry 4.0 transforms production models, business practice and economic theory. The achievements of every industrial revolution form so-called gales of innovation (Schumpeter, 2003).

The retrospective analysis of the economic changes provoked by the three industrial revolutions allows drawing the following conclusions:

First, the objective economic needs to reduce production costs, to increase competitiveness, and to meet raised consumer demand, drive and stimulate technical research and innovation that provokes the emergence and development of industrial revolutions.

Second, the dispersion of technical innovation, that marked the industrial revolutions, transforms dominating economic theory and business practice, expanding consumer choice and raising the standard of living.

Third, the achievements of the First Industrial Revolution prepare the findings of the Second Technical Revolution, which transforms economic theory and practice. The Information Revolution is the result of the technical thought development within the Second Industrial Revolution in the conditions of improvement of the established economic models and business practices. Industry 4.0, as an embodiment of the technological achievements of the Information Revolution, brings in a quality new dimension business relationships and, due to value added, transforms business models and economic theory.

It can be concluded that every major industrial revolution (for example, the First and Third Revolutions) was followed by a subsequent technical revolution (respectively the Second and Fourth Revolutions), which opened up new perspectives for expanding business potential and assigned a new line of economic theory development.

3. THE DIGITALIZATION OF ECONOMIC RELATIONS IN INDUSTRY 4.0

The Industry 4.0 is an information transformation of production based on knowledge externalities, knowledge connectivity, viability of knowledge interaction and transaction (Antonelli and Ferraris, 2017). Consequently of this path dependence process, the integration of data, people, processes, services and systems creates smart factory and new manufacturing ecosystems. Industrial Intelligent Production (Intelligent Production), Intelligent Logistics and Intelligent Services, integrated into Industrial Internet of Things and Internet of Services, End-to-End Engineering and Cyber-physical Systems, are on the basis of Industry 4.0 (Neugebauer *et al.*, 2016).

Cyber-physical systems and end-to-end engineering achieve the integration of artificial intelligence, people, processes and innovation (Neugebauer *et al.*, 2016). It ensures the integration of digital and physical processes during the product life cycle. The aim is to increase the stakeholders' value added in digital age.

Smart technologies go beyond the active user-consumer model of e-business and e-commerce. The consumer uses exchanges and disseminates information and knowledge, and acquires the necessary goods. The value added in this process is a function of the circulation of information and information-based services. Digital technologies allow the consumer incorporation into all phases of the product life cycle. The client is not solely purpose of business activity. Due to digital simulation, he becomes a creative partner contributing to the innovation activity of the company and the production process. The one-to-one enterprise business model (Amor, 2002) acquires quality new dimensions in delivering high added value to the client. Thus, the economic growth in Industry 4.0 is a function of the quality and intensity of the relationship between this open-ended feedback system between active user-consumer-firms, individual preferences and acts and endogenous knowledge externalities (Antonelli and Ferraris, 2017).

In the digital age, economic agents change both their production function and their utility function (Antonelli, 2011). Consumers can support product innovation and according to their preferences, personalize products (Qin *et*

al., 2016). The abundance of knowledge and knowledge externalities, accumulation of competences and creativity allow to the active user – consumer – co - producer to change both its preferences and the available technologies. (Antonelli, 2011).

Digital simulations reduce the time from inventing the innovative product to its implementation in the manufacturing process and market realization. The digitalization of the economic relationships producer – consumer internalizes real consumer needs in the production process.

The consumer involvement in all stages of the product life cycle transforms the producer – client relationships. The client becomes a co-producer in the digital environment of Industry 4.0. He contributes to the creating of specific value added from which he will benefit. In this situation, in compliance with all product quality requirements, the manufacturer couldn't be unilaterally engaged in any risks and maintenance costs even within the guarantee period. The service responsibility must to be shared. The total digitalization of the production and consumer relations determines the necessity of introducing special insurance "Unjustified expectations". Its purpose is to guarantee, in a spirit of equal treatment, the interests of the manufacturer and the consumer in the presence of dissatisfaction and defects in the exploitation of high-technological personalized products.

The direct integration of consumer desires into the production process does not remove mass production. Mass customization comes out on stage. The consumer culture acquires a quality new direction of development. The digitization and personalization of consumer preferences leads to an endless increase in consumer choice in the conditions of sustainable high-technological manufacturing solutions (Stock and Seliger, 2016). A high-technological digital environment deepens the consumer's being as a social interactions user who uses and disseminate information and knowledge and motivate the others to search for new goods and new technologies (Antonelli, 2011).

The consumer participation in the process of product innovation and manufacturing is a source of value added. On the one hand, the consumer digitalizes and visualizes his needs and preferences. Materialized in a tangible product, they are a source of satisfaction and maximized well-being for him. On the other hand, the consumer involvement in the product lifecycle stages delivers value added to the company by reducing costs, time and resources for marketing research, and developing a product demonstration version. The digital possibilities of Industry 4.0 ensure integration of the internal and external innovation capabilities of the firms. Thus, the total productivity increases in the condition of minimal production costs. The actually claimed client desires replace imaginary custom preferences.

The consumer integration in the manufacturing process changes the nature of the enterprise – stakeholders' relationships. The high-technological business environment of Industry 4.0 is an emanation of one-to-one marketing (Amor, 2002). The digitalization of economic relations orientates marketing towards establishing sustainable relationships with target audiences through identification, interaction, differentiation, tracking, personalization and customization (Amor, 2002). Building client loyalty is a function of the ability of company to integrate them into the product lifecycle stages and to produce and deliver their preferred products and services. In Industry 4.0, business revenues and success depend on the ability and the capacity of companies to satisfy in time and quality consumer desires.

Smart factory brings to a new level the production processes automation. Industrial Internet of Things combines in intelligent system the communication and technical phases of the manufacturing process and provides distant products and services support. Saved costs, time and resources increase the production process operational efficiency and quality. The production digitalization delivers value added simultaneously to companies and consumers.

The industrial application of 3D printing is an emanation of environmental friendliness. It decreases the use of resources and optimizes the environmental aspects of production processes by reducing the wastes and emissions of

production and logistics. The smart product logistics and distribution accompany the high-technological manufacturing.

The integration of technological achievement of Industry 4.0 and the digitalization of economic relations create a value added chain. Intelligent ICT and the efforts to increasing value added generate intelligent cross-linked value creation modules that enhance effective resource allocation and optimize environmental performance through supply chain and value creating chain integration. The creation of such complex value networks changes the competitive environment and companies partnerships relations. The telecoms and Internet providers become the main industrial contractors of enterprises. The individual nature of consumer preferences implies the formation of multiple and situational business partnerships. Depending on the form of the request, competitors can also become partners.

The intelligent production process of the Fourth Industrial Revolution incorporates internally the requirement for sustainability. The overall production process is subject to the principles of eco-design and the provision of consumer well-being. The innovations of Industry 4.0 allow cost reduction, rationalization of production process and long-term competitiveness (Háry, 2016). The digitalization of manufacturing processes and the achievements of biotechnology research determine the resource efficiency and clean production. Thus, Industry 4.0 provides the circular and biological economy integration.

The analysis of the digitalization of economic relations in Industry 4.0 allows drawing the following **conclusions**:

First, in Industry 4.0, the manufacturing process fully integrates with the latest smart information and communication technologies, reaching quality, speed and flexibility in satisfying consumer desires.

Second, the digitalization of production and economic relations achieves on the basis of knowledge externalities, interactions, transactions and feedbacks between active user – consumer and firms, simultaneous horizontal and vertical integration, which automates the supply chain and added value chain.

Third, the focus of the production and digital transformation of economic relations in Industry 4.0 is the imperative of increasing value added for stakeholders. Industry 4.0 is the revolution of value added.

4. THE REVOLUTIONARY DIMENSIONS OF ADDED VALUE IN ECONOMIC SCIENCE

In the high-technological environment of Industry 4.0, the value added increasing strategy allows the achievement of efficiency, corporate growth, high consumer satisfaction and community welfare. The main advantage of the pursuit to provide high value added for stakeholders is the possibility of holding out new marketplaces beyond the usual competitive edge for the industry by effective consumer's involvement into the production process.

The customer integration in product life cycle stages merges manufacturing and consumption. They are in a horizontal integration state. The producer offers. The consumer improves and personalizes. The consumer can also offer a new product. Manufacturer produces and delivers. The new relationships producer – consumer go beyond the neoclassical model of price, quantity and utilities comparisons. The time gap between production and realization disappears. The complete synergy between production and market is established. Their symbiosis creates the value added chain. In the light of this situation, the price loses its sense of information bearer of signals from the consumer to the producer. According to the specific consumer requests, the prices are individualized.

The technological achievements of Industry 4.0 overcome the supply scarcity of goods. In terms of sustainability, the ability to personalize products and services increases endlessly their diversification. The ability of client to participate in the production process makes the consumer choice endless. The scarcity of resources and goods is not yet the regulator of economic relations. Thus, the marginal utility concept becomes inadequate in the business environment of Industry 4.0. To justify the new digital business relationships, a new economic theory has to be **constructed** on value added. The added value economic theory integrates into its analytical area the principles of New Millennium Economics (Colander, 2000).

In the digital revolution era, corporate growth strengthens as a function of expanding capabilities of companies to deliver products with increasing value added. The innovations are the basis for creating the high value added for stakeholders. The value added economic model focuses on the client and the portfolio of its needs, which correspond to transformations in the strategic orientation of companies and to the process and project management implementation in their activities. In this perspective outline, the achievement of high and sustainable business results consists in the proactive creation of *value innovation* (Chan and Mauborgne, 2015) that combines reduced production costs, eco-design and increased consumer value. The goal is the complex satisfaction of consumer expectations and desires, which implies corporate development and growth.

The institutional transformation of microeconomics towards value added implies following the consistency: value for the client – price – cost (see Chan and Mauborgne (2015)). Increasing consumer value by lowering costs and simultaneously profit keeping for company provokes the development of innovative environmental and digital practices in the production and distribution of the product and / or service. The achieved system integration of the particular levels in the organizational structure around the engagement to the increasing in value added for client predetermines corporate efficiency and sustainability.

The transformation of economic relations through the increasing in value added goes beyond traditional management business models. Combining individual processes into the innovation management, products, and benefits for customer in an integrated high technological digital smart system determines the transition to flat, horizontally jointed organizational structures. Each consumer request is a separate business case that validates the project management model and insists on decentralized decision-making process. The smart decentralized targeted working networks based on situational and independent project and process management conduct the business structure activity.

The rising value added perspective provides not only the corporate development but also a potential to redefine the competitive areas in the given industry with a focus on the customer and the creative expression of his needs and desires. In Industry 4.0, the value innovations change the traditional competition models, maximizing value added and the customer welfare design. The competition in value innovations removes the competition in price, quality, sales and after-sales services. The dominated competition model in Industry 4.0 is commensurate with the innovation capability. In the digital environment, the long-term competitiveness of companies is a function of increasing flexibility, efficiency, communication, information and intelligence (Gabriel and Pessl, 2016). Competition is accomplished on the axis innovation –value added for client - quality and capability to satisfy the expressed consumer desires.

The innovations and increased value added are the focus of overall economic structure of Industry 4.0. In the complex modern environment, the project consortia and cluster associations carry out the creation of innovations. The synergy is the driving force for cooperation achievement. Building clusters and high-technological hubs have the advantages for innovations, productivity and efficiency of participating companies. The increasing role of clusters in creating value added approves them as the main form of capital concentration and intellectual power in the high-technological economic environment of Industry 4.0. The focus on personalized product manufacturing implies the construction of target clusters and the establishment of temporary partnership configurations. Thus, the boundaries of a particular market and its competitive environment are dynamically variable. Depending on the desired products for manufacturing and delivery, the same companies can in one case to be partners and in another – competitors. The capital concentration couldn't be authentically determined by the market share. In Industry 4.0, the capability of companies and their capacity to create and deliver high value added to stakeholders determine the capital concentration. The innovativeness is a function of participation in targeted cross-sector cooperation and clusters.

The innovation capability development of Industry 4.0 requires the constant implementation of high-technological research, that the main source of funding is the public-private partnership¹. The strong investment need in the building of the specialized high-technological industrial manufacturing infrastructure in Industry 4.0 predetermines the active involvement of various public funds² fostering innovation, competitiveness, high-tech start-up entrepreneurship. The sustainable creation of value added for the various stakeholders couldn't be a priority solely for the private sector. The risks include the possibility of monopolizing entire economic sectors – for example, by patenting communication protocols. Moreover, the transition from conventional to high-technological production increases inequality between companies and consumers. The digital literate consumers will benefit from a higher standard of living. The high-technological companies will receive economic rents from their innovation capabilities (Stiglitz, 2013; Stiglitz, 2015). The conventional production companies will gradually constrict their market share. The unemployment among unskilled workers will increase. The maintenance of conventional manufacturing capacities will make production more expensive. Thus, the digital incompetent consumers will aggravate dramatically their standard of living. On the one hand, they will not benefit from high value added, and, on the other, the marginal utility that they would receive would have constantly rising price.³ In order to prevent uncompetitive practices, to protect common interest and to provide access for all economic agents to the products of Industry 4.0 and the high added value, public-private partnership is recognized as the main financial instrument for managing and distributing funds in the new digital high-technological environment. Overcoming outlined dysfunctions implies the orientation of corporate social responsibility and social entrepreneurship strategies towards investments in building and deepening digital knowledge among mass population groups. The transformation of economic relations through high value added in Industry 4.0 is an emanation of the green circular knowledge economy.

In summary, the analysis of changes in economic science resulting from transformation toward value added allows drawing the following conclusions:

First, the establishing the structural and functional economic relations in Industry 4.0 on the idea of increasing added value imposes a change in traditional economic models based on marginal analysis. The new digital high-technological environment overcomes the scarcity of resources and wealth, and in the same time, provides sustainable and clean production and delivery of products and services. In this line of thought, the marginal utility and productivity of goods do not yet govern economic relations. In the digital age, the innovation and the value added are the new economic regulators.

Second, the digitization of business and production processes determines the dependence of corporate development and growth on innovation capability of companies and their capacity to generate and deliver the desired value added by the client. The main mode for developing innovative capacity of firms is participation in clusters, cross-sector cooperation and network project consortia.

Third, the constant process of renewing production and economic processes in creating high value added for stakeholders changes the dominant competitive areas, forms of capital concentration and social inequality. Thus, public-private partnership establishes not only as a major financial instrument for fostering enterprise,

¹A special consortia and cross-sector networks of enterprises, universities and research centers, called Digital Capability Centers (DCCs), created for the development and implementation of Industry 4.0 high-technological production environment.

²The country specific programs for Industry 4.0, such as Industrie 4.0 in Germany, the Factory of the Future in France and Italy, Catapult Centers in the UK, base on the creation of cross-sector partnerships with public funds support.

³ The outlined inequality is even more dramatic between developed high-technological countries and under-developing societies. The economic relations digitization further reinforces poverty in Third World countries, whose production patterns can still be commensurate with the First and Second Industrial Revolutions' achievements.

entrepreneurship and innovation. It is a major factor in preventing uncompetitive practices and expanding access to increased value added in the high-technological digital environment of Industry 4.0.

5. CONCLUSION

The products of scientific and technological progress, reflected in the industrial revolutions, transform the economic relations into a structural and functional aspect. During the First and Second Industrial Revolutions economic science evolved from the labor theory of value to marginal analysis. The rise of technological innovations from the Third Industrial Revolution in Industry 4.0 transforms economic theory, business practice and public policy by increasing the value added for the stakeholders. Concentrating the aggregate corporate efforts to increasing consumer satisfaction through producing more value added contributes in digital era to improving community welfare by raising the standard of living.

In summary of the analysis of the economic transformations provoked by the increased value added in Industry 4.0 it can be concluded that:

First, the digitalization of production and consumer environment, in the conditions of sustainability, overcomes the scarcity of resources. Digital consumer involvement in the production process and the indefinitely growth of consumer choice, in keeping the requirements of eco-design and clean production, invalidate marginal utility theory. The concept of increasing value added emerges on foreground. The economic growth, consumer satisfaction, individual and community welfare are a function of innovations and added value.

Second, the value added revolution brings to a quality new level not only the producer – consumer relationship, but also the structure of competition, the capital concentration and the dimensions of inequality in society. Expanding the application of technological achievements of Industry 4.0 and extending the access of broader stakeholders to innovative digital products and services imply deepening and improving the public-private partnership mechanisms as a guarantee for the unity of private and public interests.

Third, the integration of the virtual and physical environment, people and processes in the smart digital manufacturing system of Industry 4.0, accomplishes an evolution of the sustainable development paradigm, based on the value added. The digital economy contains in itself and builds on the sustainable circular knowledge economy.

The evolutionary origins and revolutionary dimensions for economic science, business practice and welfare focused on the increased value added for stakeholders highlight the technological achievements of Industry 4.0. The enhancement of digitalization of business and production relations is not only a question of innovations and investment. Above all – it is a choice for higher standard of living through sustainable creation and delivery of increasing value added.

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