MANAGEMENT MODELS FOR THE EU INLAND FREIGHT TRANSPORT INDUSTRY AT THE CONVERGENCE WITH THE KNOWLEDGE ECONOMY AND KIBS

AMALIA-ELENA ION

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FOREWORD

This book has the sole purpose of making a statement related to the perspectives of how the freight transport sector would not only better perform, but also provide a hub for fair competition, equality, quality standards, fair price distribution, and, most importantly, provide a management model that projects growth through the removal of intermediaries, and showcasing the better administration and enforcement of legislation in the direction of each inland mode of transport available for the freight goods' shipments within the EU Member States.

The main questions are related to the possibility of bringing innovation into a dull sector, and possibly transforming the way in which business is done today. The research projects around the following ideas: Is the EU freight transport industry transforming into a knowledge intensive activity, or a knowledge intensive service? Will it become a significant part of the knowledge economy? Does the public policy agenda try to shift the gear into this direction? The freight transport sector is intrinsically a secondary demand within the background of economic activity, and it mostly comprises of services – either for shipments and distribution, or for logistics and storage. The current research is mainly focused on the distribution dimension of the freight transport sector, by considering the inland transport modes – road, rail, and inland waterways. The discussion, from its initial stage to its dissolution, revolves around the current status, as well as possible/probable conditions that might arise given changes in the sector. The entirety of the research is, basically, a manuscript of general knowledge, measured responses from the industry (through econometric analyses), and personal inputs on the topic.

From an applicative perspective, the freight transport sector within the European Union refers to all the activities that are performed with the ultimate scope of distributing freight goods from point A to point B in order to feed the economy with final products and/or services. Although theoretically its activities are fundamentally linked to the extensive usage of heavy machinery, the freight transport sector is providing a connectivity service to all the other economic sectors, as Savy and Burnham (2013) describe how transport and industrial capital are inseparable links. The fact

that the freight transport is a service brings a conditioning to the overall mechanism (Hedvall et al., 2017), especially at the precipice of innovation and technology, of extensive ICT inclusion, and of widely spread knowledge creation.

Moreover, the book is continuously assessing the management dimension, through the understanding of different impact levels based on types of enterprises involved in the service provision. Since the greater part of the freight transport sector in the EU is carried out by SMEs active in the road freight transport (Eurostat Pocketbooks, 2011), since the modal split heavily relies on the road traffic, and since the public policy attention towards the freight transport is growing, the research will imperatively command and focus on those aspects when dealing with the topic.

The main objective of the research is that of accepting or rejecting the correlation between the inland freight transport sector and the knowledge economy – through adherence to KIA and KIS and unlocking the potential development of the sector through a set of proposed management models.

The first phase of the study is represented by the econometric analysis, based on the hypotheses development, which will determine the degree of adherence of the inland freight transport sector to the key dimensions of the knowledge intensive business services.

The next phase of the research comprises of the drafting of management models for alignment of inland freight transport to KIBS, and the introduction of a recommended action plan. At this point, the perspective focuses on both macro and micro levels, assessing the situation from the business level, through the general economic framework, and at the convergence with innovation and technology.

Finally, the study combines all the previous work into a colossus management model, at the precipice of blockchain technology inclusion, for all the modes of inland freight transport. This part is entirely dedicated to creating a strategic management model, following a vision, mission, and a set of strategic objectives, that will be furthered into action programmes.

The research is meant to uncover significant information on the status of the inland freight transport sector, from a vantage point (macro level), and further into specific spheres of the sector. The main advantage of the research is that of having had hands on experience in the field and being able to forward a strategic perspective into how the sector might look like if it were to become more efficient, transparent, traceable, as well as defined by fair competition, and innovation and technology adoption.

1. INTRODUCTION

1.1. Problem statement

This research has always been deeply connected to my life, at a level where the boundaries between personal and professional started to disappear. The mere reason behind the intrinsic need for furthering several questions in this direction was born from my personal experience. To some extent I might even argue that it is a personal vendetta on the subject, on the industry at large, and, especially, on how this business sector exists and performs. Having had hands on experience, and faced a significant number of challenges along the way, it is only poetic to put all my efforts into making a statement related to the how the freight transport sector would not only better perform, but also provide a hub for fair competition, equality, quality standards, fair price distribution, and, most importantly, provide a management model that projects growth through the removal of intermediaries, and showcasing the better administration and enforcement of legislation in the direction of each inland mode of transport available for the freight goods' shipments within the EU Member States.

The main questions are related to the possibility of bringing innovation into a dull sector, and possibly transforming the way in which business is done today. The research projects around the following ideas: Is the EU freight transport industry transforming into a knowledge intensive activity, or a knowledge intensive service? Will it become a significant part of the knowledge economy? Does the public policy agenda try to shift the gear into this direction? The freight transport sector is intrinsically a secondary demand within the background of economic activity, and it mostly comprises of services – either for shipments and distribution, or for logistics and storage. The current research is mainly focused on the distribution dimension of the freight transport sector, by considering the inland transport modes – road, rail, and inland waterways. The discussion, from its initial stage to its dissolution, revolves around the current status, as well as possible/probable conditions that might arise given changes in the sector. The entirety of the research is, basically, a manuscript of general knowledge, measured responses from the industry (through econometric analyses), and personal inputs on the topic.

1.2. Theoretical background

The freight transport sector within the European Union refers to all the activities that are performed with the ultimate scope of distributing freight goods from point A to point B in order to feed the economy with final products and/or services. Although its activities are fundamentally linked to the extensive usage of heavy machinery, the freight transport sector is providing a connectivity service to all the other economic sectors, as Savy and Burnham (2013) describe how transport and industrial capital are inseparable links. The fact that the freight transport is a service brings a conditioning to the overall mechanism (Hedvall et al., 2017), especially at the precipice of innovation and technology, of extensive ICT inclusion, and of widely spread knowledge creation. The following part of the paper is assembled in the direction of bringing together services and innovation, and of underlining the imposed structures that will be soon expected from the freight transport sector. Moreover, the management dimension is to be assessed, through the understanding of different impact levels based on types of enterprises involved in the service provision. Since the greater part of the freight transport sector in the EU is carried out by SMEs active in the road freight transport (Eurostat Pocketbooks, 2011), since the modal split heavily relies on the road traffic, and since the public policy attention towards the freight transport is growing, the research will imperatively command and focus on those aspects when dealing with the topic.

The first dimension of services addresses the out of the norm capacity and mechanism of the former. The peculiarity of services resides in the innovation processes it must abide to; hence, small enterprises are liable to all sorts of impediments when paralleled to the evolutionary processes taking place within medium and large enterprises (Gallouj, Weinstein, 1997). The main factor imposing a significant threat is determined by the means to an end – namely, the opportunities for financing projects. Moreover, the larger enterprises are open to market knowledge at a level that is impossible to achieve for smaller enterprises. The available technological innovations are also costly, and SMEs have lower opportunity levels for learning (Dankbaar, 2007) new ways to use technology. The learning process is, at the same time, pretty much localised, as knowledge is transferred from specialised groups, while routines for new technology and innovation implementation are difficult to shift. From the perspective of the human capital, the skill-level of the staff already active on the labour market is in direct correlation to the implementation of new technologies. Therefore, the latter is driven by prior training and/or job redesign, which are created under the impact of investments and financial effort.

The second dimension of services resides in their intangibility. The services are by nature immaterial, and information driven. This fact turns into both an advantage and a threat in the application of technology to the sector, especially through the perspective of expenditure related to technological change. Consequently, the legislation, particularly the intellectual property, is the dimension that enforces or coerces this sector. Moreover, it is generally accepted that, so far, the measurement of innovation is truly challenging, precisely due to the intangibility of services (Romero et al., 2019).

The third dimension of services dwells in the relationship established between demand and supply. The inclusion of technology within this interaction is the major force changing the script (Banerjee, 2018), as the gameplay between the two parties is typical for services that imply complex and dynamic systems for innovation. Furthermore, the supplier has a double role, as it becomes the creator of trust and expertise. This is only possible through general development, and human capital investments. The knowledge intensive services, more than other services, demand new solutions (i.e., ICT involvement), base their operations on combinations of technology (e.g., in constructions – environmental services and engineering services), and associate with complicated problems (Yeh, Ramirez, 2017). In order to transfer this prior knowledge to the considered case, it can be argued that a possible highly complicated problem could be the environmental analysis resulted from the freight transport impact on health and safety, the economic instability of the freight transport sector, the lack of particular and well-defined knowledge regarding the policy decision-making processes for the creation of a productive, innovative, and competitive freight industry, capped at the degree of investment in knowledge. The latter is, unfortunately, prone to rapid depreciation through imitation. Nevertheless, the process of learning by networking, and the acquisition of knowledge through innovation are already essential tools in the survival game of the new economy.

1.3. The beginning of the research and its purpose

The main scope of the paper resides in the investigation for the discovery of the future application and impact of the freight transport through the statistics, within the knowledge economy and KIBS sector.

The EU international freight transport industry has been a particularly close topic within the author's research performed in the last three years. The direction towards discovering and unveiling some truths about this business sector started as very personal and with direct and subjective importance. As a derived demand, the freight transport is not a

huge value-adding economic sector and might be perceived as a necessary bad. Especially since the growing debacle regarding its potential impact on the health of the environment, the transport sector, in general, started to be researched from the perspective of uncovering the extent to which it indeed affects our surroundings in a negative way. The literature spreads from air pollution to noise pollution, to the disturbance of habitats, and even threats to the health and safety of the general population (Andres, Padilla, 2018; Moutinho et al., 2017). Although scientists can come up with a wide range of topics that seem to shed an uninviting lighting on the transport industry, the latter is fundamental within the functioning formula of the entire economy (Poliak et al., 2021). The transport system represents the link between all the parties involved in all the economic sectors; it is the chain in the supply chain! It has adapted to all sorts of transportation needs, and the major modes of transport nowadays are road, railways, inland waterways, maritime, and air transport. Since the ICT has greatly impacted our society, other modes of transportation (e.g., drone shipments) were developed, representing the subject of further research in the future.

From the perspective of the knowledge economy (Dima et al., 2018), it is wise to start with the statement that the society is based and has evolved around knowledge, and, today, that society is facing a turning point where knowledge is no longer limited to niche markets, but spreads across all economic sectors – in agriculture through the new dimensions imposed by the blockchain technologies (Grigorescu, Ion, 2021), in manufacturing by changing the mechanisms and systems behind not only production processes, but mostly by changing the strategic management approaches, and in services by starting a deconstruction process and turning it into a new historical milestone (e.g., moving the banking system into the cryptocurrency market, shifting from governmental controlled processes toward decentralized, transparent solutions). Within the knowledge economy, there is the context of knowledge intensive activities (Eurostat Statistics Explained, 2020), and knowledge intensive services (Eurostat Statistics Explained, 2016), floating around three key dimensions (Hadad, 2017) – knowledge, as in expertise, skills, strategic information, knowledge transfer, generation, and diffusion of knowledge at national, regional and global levels; innovation, which permits access to key expertise, change and extent of change, market domination; and spatial proximity, referring to the knowledge transfer process, particularly in areas enterprises and human capital tend to agglomerate and create knowledge, innovation, and new technology.

As a general configuration of what that perspective might bring, the consistency of this particular research stems from the observation of

different correlations between the EU-28 international freight transport output, calculated for each of the three modes of transport (road, rail, inland waterways) in million-tonnes per kilometre, and the regressors from different categories, such as environment, business and economics, innovation and technology, education, population and labour, and infrastructure and transport. The research is based on a panel data multiple regression model, performed on a database assembled around Eurostat, World Bank and OECD data. The study covers the period 2007-2018 (in order to avoid unbalanced datasets), and the econometric model was estimated with the statistical software Stata 13.

1.4. Objectives and phases of the research

The main objective of the research is that of accepting or rejecting the correlation between the inland freight transport sector and the knowledge economy – through adherence to KIA and KIS and unlocking the potential development of the sector through a set of proposed management models.

The first phase of the study is represented by the econometric analysis, based on the hypotheses development, which will determine the degree of adherence of the inland freight transport sector to the key dimensions of the knowledge intensive business services.

The next phase of the research comprises of the drafting of management models for alignment of inland freight transport to KIBS, and the introduction of a recommended action plan. At this point, the perspective focuses on both macro and micro levels, assessing the situation from the business level, through the general economic framework, and at the convergence with innovation and technology.

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2. THE KNOWLEDGE ECONOMY AND KNOWLEDGE INTENSIVE-SERVICES

2.1. Services as growth propeller of the economy

The global economy has three main sectors – agriculture, manufacturing, and services. Each sector of the economy is intrinsically related to a particular era in the history of human civilization, and the economic growth it has sustained. It all started with agriculture, but, hundreds of years later, it came down to a shrinking trend for agriculture in the face of the newly acquired perspective of the industrialization. The active human capital was, by that time, building, literally and figuratively, a new booming, revolutionary world. A few decades later, there was not an ounce of developed economy across the globe that was not already dominated by the services sector. In the 21st century, services are to be found in activities across all sectors of the economy, as their value-added aperture gave a new light on deindustrialisation and post-industrialisation, through the quality and value testing, the role of economics, the inclusion of innovation, the importance of skills, and the necessity for higher quality of working life. In 1996, Miles classified the services from the perspective of their special features and imposed a balanced look over their purpose and finality. He diversified the idea of services in relation to their ultimate scope, thus dividing the categories used for the explanation as follows – service production, service product, service consumption, and service market. Each type of category included specific elements, that briefly explain the transition and transformation of services from mere cogs in the production mechanism, to their specific, undivided status on the market (Boden, Miles, 2015).

Table 1. Miles's classification of services

Service level	Provision of service
Service production	Technology and plants: At this point, services required low levels of capital equipment, but needed heavy investment in buildings. Labour: Some of the services were highly professional and needed specific/custom skills to be supplied. The knowledge was specialised, but not technologized. Organisation of labour process/Features of production: The human capital was focused on craft-like manufacturing with limited management control, while production was non-continuous with limited economies of scale. Organisation of industry: The services were found mostly within the public sector sphere, or in small-scale, family-owned enterprises.
Service product	Nature of product/Features of product: Services became immaterial, and information-intensive; the latter was difficult to store and transport. There was a vague boundary between product and process, and the final deliverable was individualised. Intellectual property: The abstractedness of services translated in protection problems, and the main way of copying a service or part of it was through innovation. The reputation of enterprises was paramount.
Service consumption	Delivery of product: The supply of services was simultaneous with production, and the delivery was established in a common place for supplier/producer and consumer. Role of consumer: The main focus is on the final user, and the latter is active during the forwarding of the service. Organisation of consumption: There was no separation between production and consumption, and sometimes self-service was the case.
Service markets	Organisation of markets: Services can be public (free), and private (with invisible costs attached). Regulation/Marketing: The sector is professionally regulated especially for some services, although they can never be observed priorly to their production and delivery.

Source: Adapted from Boden & Miles (2015).

The tertiary sector has a particular effect to the overall status and structure of the economy, as it can be clearly observed from the iteration above. Currently, the services have a significant impact on the environment, which is transferred in pollution related policies, on the artefacts (meaning all the outputs of the secondary sector – which basically also include the freight transport), on people, and on the symbols. The latter are represented by information knowledge services that use intelligence within the operations

and highly technologized communication structures. These gave birth to the knowledge-intensive business services (Shearmur, Doloreux, 2018), a result from the combination of R&D, innovation, technological knowledge, professional knowledge, wide array of information sources, problem specific knowledge, and generic knowledge (or experience, due to supplier-user interaction). Moreover, the terminology was updated to include concepts such as learning by networking, and learning to learn, all in the general acknowledgement that data turned into information, and experience turned into patterns forms the highest level of competitive advantage on the market today. The growing KIBS are the first output of a transitioning and changing economy, as the demand for knowledge increases due to the generalised uncertainty of the structural performance determined by the emergence and development of new technologies (Wyszkowska-Kuna, 2018). Momentarily, the only plug in this techno-logical expansion resides in regulation and public policy (e.g., environmental regulation, technology-related standards, trade liberalisation, globalisation of production), but the power of many obliterates that of the strong few. That civilization, that went and conquered so many spaces and times, is today going shyly towards the new era – knowledge economy.

The freight transport industry is a derived demand, and has a slow, steady, and small output in the economy. Nevertheless, its impact is considerably higher when observed from a different perspective. Taking into consideration the bigger picture and observing from afar the interconnectivity of the global economy, a single element comes as a constant – the transport industry. Within the latter, two directions are identified – the freight transport and the passenger transport. This book will further develop the case of the freight transport, where it is directing towards the futuristic planning for externalisation of functions and demand for KIBS enterprises. The reasoning behind this option is that like many other services, passenger transport services can be very easily substitutable with goods and self-service. Take for instance the case of new business models in KIBS, especially coming from the technology enterprises, such as Uber – a decentralised passenger transport service with fares and costs considerably lower than those proposed by taxies, but with higher quality of transport than the public transport system.

From a theoretical projection, the knowledge economy and KIBS are aligned with the concept of innovation, which, in turn, was identified as the major economic growth propeller through the Neo-Schumpeterian approach (Boden, Miles, 2015). This paradigm basically stands for creative destruction which becomes replaced by new innovations and highly efficient technologies. Moreover, the reversed product life cycle model proposed by

Richard Barras transcribes the innovation process into three phases based on the nature of innovation (i.e., incremental innovation, radical innovation, product innovation), the purpose of the innovation (i.e., improve efficiency and reduce costs, improve effectiveness and expand market, develop new service products and differentiate them), the types of investment (i.e., investment in capital to either deepen technology or to widen technology usage), and the impact on labour (i.e., labour displacing, neutral impact on employment, employment generating) (Tidd, Hull, 2003). Basically, during the last seventy years, the innovation process changed the global society and economy, at first with incremental shifts that improved the efficiency of the processes through the introduction of computers in the day-to-day activities, then through a radical movement towards quality enhancement, where the online world was created, and finally with the realisation of a different product – a digital world, through new service, networking, and high-impact ICT. This last phase is identifiable with the knowledge economy and shows a glimpse of how it will look like in the next half century. Today, the innovation process is perfectly aligned with high technology devices, platforms, and operators, and it is visible, even if in niche markets, the convergence to the knowledge economy – the rapid creation of knowledge, the massive growth of knowledge flows and externalities, the enhanced efficiency, quality and equity, the formation (along outside lines) of a decentralised economy (e.g., the blockchain markets – cryptocurrency, agribusiness, decentralised banking systems).

2.2. Knowledge and economics of measurement

Knowledge represents a by-product of manufacturing and use; therefore, it can stem not only from research, but also through experience (learning by doing, and learning by using). Thus, it is considerably difficult to measure knowledge that was created by learning. Machlup has defined a sector specialised in all the activities that converge around the creation and processing of knowledge and tried to measure its contribution to the GDP (Foray, 2004). At the same time, Foray (2004) included Eliasson's discussion on the fact that knowledge production and processing does not limit to a certain economic sector, but it is rather located within all the activities that are active in the economy, including those that are non-reliant on high-tech. This means that knowledge is no longer bounded to certain areas where it is synonymous with expertise, and it can be experienced across the global economy, hence the decentralised system. Nevertheless, the measurement of knowledge and of its probable impact on a given economic sector is rather strenuous. An easy reproduction of the way in which knowledge can be defined as an economic good is by working on an

applicative example. The knowledge behind the technology and usage of fire can be passed from one person to the other without the knowledge to shrink in size. This basically accounts for the fact that knowledge is generally available and does not diminish when consumption occurs. But knowledge portraits another characteristic that makes it difficult to access by anyone who would want to acquire it (Heiman, 2002). In consequence, knowledge can be interpreted and measured through the resources that are allocated in knowledge production, which, primarily, refer to R&D expenditure, and through the results of the activities involved in knowledge production as specific outputs – patents, publications, software, new products, and as economic variables.

Unfortunately, there is no framework for indicators in the knowledge economy that would abide to the freight industry. Nevertheless, one can be drafted around potential inputs, such as expansion of human capital involved, equipment, organisational capacity, investment, and expenditure applications, etc., and probable outputs that would take the form of ideas, and new products/services. Generally, the impact of the latter would be observed in the advancement of knowledge in the given field, potential improvements in management, in the work organisation, probable cost reductions, and productivity surges (Giannopoulos, Munro, 2019). A research focused on uncovering the convergence of a given economic sector to the knowledge economy would be assessed through regressors such as R&D expenditure, R&D investments, R&D in education, training, information, coordination, investment in human capital (including health expenditure), ICT expenditure, etc.

In economics there are four categories of goods – private goods, that are excludable and rival; common goods, that are non-excludable and rival; club goods, that are excludable but non-rival; and public goods, that are non-excludable and non-rival. A rival good is one whose consumption is not simultaneous for consumers, and an excludable good is one that consumers must pay for in order to have access to. A pure public good can be considered as one that allows for simultaneous consumption of the same bit and is (generally) free to access by all the consumers, a range of characteristics that align to those of knowledge (Geuss, 2003). Moreover, due to the massive changes that took place in the last decades, there is a sort of uncertainty creeping up in all sectors of the economy. There is no longer a sentiment of stability and safety, as more threats seem to disturb the constancy of this system. Since those observations have been of uttermost importance lately, the topic of sustainability became sort of a life buoy that prevented the system from collapse. There are four pillars of sustainability – human, social, economic, and environmental, and those support

programmes and activities that aim at the preservation of a given resource (Shmelev, 2019). Considering all that was valid until today will no longer be productive in the near future, this ad infinitum status is challenged particularly by technologies. The latter refers to the successful combination of two experiments – those that change nature, and those that change the way human capital works. Ultimately, as Eliasson also mentioned, this New Economy (Cantner et al., 2005), based on radical innovation, advanced technologies, and knowledge, is unfolding as we speak, although in confined spaces, within the current realms of information, communication, technologies, the Internet, the blockchain, etc. For knowledge to finally transform the entire system, there is one major requirement, that of disseminating the most advanced practice of production – knowledge – through the perspective of cognitive-educational, social-moral and legal-institutional frameworks. Innovation represents the key to this transformation, but it is currently non-continuous, and only applicable through sciences, laws, or business models (Mangabeira Unger, 2019). It is, thus, a form of incremental innovation, which, in order to hit the next milestone, must reshape the institutional and political arrangements of the economy, to no longer settle on assumptions but on facts and figures.

Moreover, the knowledge economy continues to be restricted to insular vanguards, through precision agriculture, advanced manufacturing, and KIBS, although it should acquire an adaptive operational functioning for the generalised model (Mangabeira Unger, 2019). The potential of knowledge economy to produce goods and services at any scale would represent an advantage for the SMEs, to the extent to which knowledge remains exclusive due to all sorts of reasons, including financial ones. Considering knowledge production as the most advanced practice of production, one could argue that this is also the reasoning behind the developments that took place within the human capital and labour force sector. This niched knowledge economy can be observed across all major economies of the world; the interconnectivity of those developed economies offers the perfect system for the spread of people, procedures, ideas, technologies, and other resources. The anthropic habitats supported by the knowledge economy are particularly visible at large enterprises' level, where the latter dominate and factor out elements of the production process for routine displacement or commodification (Reuten, 2020). The elements of the process are structured for the basic use by semi-skilled workers, remotely, under conventional mass production. A practical application of these systematic movements could be observed when a few hundred employees of a USA based enterprise arrange for thousands of people located in China to execute routinized segments of the production plan. This

mega-enterprise will have an advantage over SMEs in its capacity to bear profitability even in the situation where fixed costs are distributed towards investment in the most advanced equipment. Those enterprises are capable of creating ecosystems (e.g., Google, Apple, Microsoft, Amazon) that permit consumer access to a wide array of products/services, and, even though the consumers might not be mandated to spend additional costs on the firm's outputs, the simple adherence of many consumers to the organic platform of the enterprise creates more value over time for the latter. The form of that value stems from knowledge, as communities of users generate knowledge and create value greater than that of material products or processes. More so, since, unlike products that are victims of life cycles, knowledge and communities are not degrading over time.

2.3. People within the knowledge system

Who is the creator of knowledge? Where does knowledge come from? What gives knowledge value? How can knowledge be transferred? What are the main ingredients in the knowledge recipe? These are some of the questions that arise from a simple shuffling of the information on knowledge and knowledge economy. As identified in this book, the knowledge economy revolves around certain elements, and without those it cannot function properly. The first element that generates knowledge and works around and with knowledge is the human capital, labour market, or, simply put, the people (Garmann Johnsen et al., 2016). Notoriously, the labour market and its relationship with capital has slowly degenerated, to the disadvantage of the former. It can be assumed that the economically dependent wage labour is a defective form of free labour, and that it has a transitory character, which also encompasses some features of serfdom and slavery. The vanguardism of the knowledge economy ultimately diminishes the potential for economic growth, hence the current situation, and institutes all sorts of inequalities. Moreover, the entire system relies on a dialectical and cooperative education within the social setting (Tanaka, 2014), while the moral culture for production demands transparency and traceability (hence, the high demand for blockchain technology implementation), and the institutional and legal regimes are reshaping alongside markets.

The consistent movements of the economy in terms of labour force and human capital determined a change of skills requirement, as increasingly enterprises employ highly skilled workers. At the same time, the intensity of employment is determined by two major trends: ICT and the ageing of the world's population. With the downfall of natality, enterprises will have a limited supply of skills, and they will be forced into investing in lifelong learning (London, 2011). Consequently, the ICT represents one of