

Identifying the skill requirements and academic characteristics appropriate to the business environment in the fourth industrial revolution

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Abstract

The purpose of this research is to identify the skill and competence requirements as well as the characteristics of universities to respond to future business developments in the environment of the fourth industrial revolution. The research methodology includes the review and analysis of literature and scientific resources in the field of the subject using a qualitative approach and thematic analysis method. The statistical population of the research includes scientific documents (articles) published since 2010. The sampling method was purposeful, based on which 87 articles were selected for final review and analysis. The reliability of the collected categories using the Miles and Huberman formula was 82%. Theme analysis was done using theme analysis method and Maxqda 22 software. The findings of the present research were presented in two parts: a) digital, social, cognitive, technical and personal competencies as skills and competence requirements of the fourth industrial revolution, and b) the characteristics of the future university in the form of professional, network-oriented, digital-oriented, competence-oriented, project-oriented, transformational, frontier-oriented, Personalized and skill-oriented education and learning. The results of the research showed that the university can prepare students for the future business environment and job creation and employability by complying with the new skill requirements and competencies of the fourth industrial revolution and acquiring the mentioned characteristics.

Keywords:

Skill training,
Theme analysis,
Future university,
Business,
Fourth industrial
Revolution.

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Extended Abstract

Introduction

The fourth industrial revolution is one of the most important technological and socio-economic developments of the modern world, which has attracted the attention of many sectors, including technology, business market, production (factories and industries), and education; and has had a profound effect on the policies and strategies of university education (Chaka, 2019). On the other hand, it creates changes in the business structure that requires the production of knowledge, skills and vital competencies acquired by the university and academics (Adznir, 2017). If the universities do not react to these changes, be indifferent, and continue the current routine; in the near future we will witness the replacement of passive universities with many agencies and companies and private institutions in charge of educational and skill services. Adjusting university and business functions with the digital conditions of the fourth industrial revolution requires identifying the skills and competences needed and on the other hand, the level of responsiveness of universities to these developments. The mismatch between the supply and demand of knowledge and skills has always been one of the concerns at the global level and the focus of attention of policy makers and researchers and academic stakeholders in general. For this reason, academic thinkers believe that the current and traditional educational system is not able to adapt to these changes and cannot adjust themselves to the needs of knowledge and skills. This growing gap between the educational systems and the business market along with the mismatch between the supply and demand of knowledge and skills can lead to instability in the economy. In this regard, the current research has two goals; A) Identifying the skill and competence requirements of the university. b) The analysis of the characteristics of the university in accordance with the business environment in the fourth industrial revolution. In this way, the researcher tries to answer the main question; what are the skill requirements and academic characteristics appropriate to business in the fourth industrial revolution?

Theoretical framework

The fourth industrial revolution

The fourth industrial revolution emerged in 2010. This revolution has three unique features that distinguish it from past industrial revolutions: 1- It blurs the boundaries between physical, biological, digital and social domains, which transforms the entire production and business process. 2- It can open a new era of investment, productivity, and living standards increase, and with a successful program in the fields of robotics, Internet of Things, big data, mobile phones, and 3D printing technology; it makes the interaction process faster, easier and more accurate. 3- The fourth industrial revolution is happening with an unprecedented speed, breadth and depth, and level of impact compared to the previous revolutions, which has turned the linear speed into an exponential (Hoa, 2017:23). In this revolution, working and managing a group has changed from belief to place-oriented to space-oriented; because the digital transformation has made space and time limitations very weak and even erased. In this era, the hybrid workplace, which is a combination of physical resources, culture, processes, and digital technologies, has been emphasized (Shami Zanjani, Asadi & Nabii, 2022: 46).

Skill system and business

Regarding skill training and business, four theories of human capital, functionalism, social capital, and the theory of professional and skill competencies have been proposed so far. The theory of professional competencies and skills, taking into account the studies of McCland (1973), has expressed a new analysis of the competencies and skills required by business. For this reason, in a part of the current research, we have tried to identify the competence and skill

requirements in the era of the fourth industrial revolution under the theory of professional and skill competencies.

Research methodology

The current research was carried out developmental in terms of the goal, qualitative in terms of the method of conducting the research, and was done by thematic analysis method. Research keywords were searched in various foreign and domestic databases. After that, the criteria for entering the study were determined and the process of inclusion and exclusion was done iteratively and not linearly. Using the purposeful sampling method, 78 articles were selected from the 305 identified articles. The validity of the data was obtained using the formula of Miles and Huberman (1994) based on the agreement of the evaluators at 82%. Theme analysis was done using theme analysis and Maxqda 22 software.

Research findings

The findings of this research were presented in two parts. In the first part, the skill and qualification requirements of the fourth industrial revolution were identified. In the second part, the characteristics of the University of the Fourth Industrial Revolution were analyzed in the form of content analysis. The results of the research showed that the skill and competence requirements of the fourth industrial revolution are placed in the categories of digital competences, social competences, cognitive competences, technical competences and personal competences. The characteristics of the future university, which are suitable for the business environment in the fourth industrial revolution, include professional, network-oriented, digital-oriented, qualification-oriented, project-oriented, transformational, frontier-oriented, personalized education, and learning, skill-oriented.

Conclusion

In the atmosphere of the fourth industrial revolution, it is necessary to create a network structure between the university and the business to regulate their performance. This regulation requires the identification of the skills and competencies required by the business, and on the other hand, the responsiveness of the universities to these developments. As a result, universities should acquire characteristics in order to respond to new developments, so that in addition to carrying out their inherent missions, they can carry out skill training as a special task in the era of the fourth industrial revolution. In this way, if the communication network between the university and business is established, students can acquire major and necessary skills as the skill requirements of the fourth industrial revolution, and prepare themselves for job creation and job selection in new businesses. The results of the research in the first question corresponds with the findings and results of Dahmani (2024), Nasir (2023), Saniuk et al, (2022), Yazdanpanah et al, (2022), Khademi Kolelu & Rahimi (2021), Genkin et al, (2020), OECD (2019), Anggraeni (2018), Ansari et al, (2018), Balyer (2018), Mohamadzadeh & Setodeh (2017), and Damian et al, (2015). In the second part, the results are in line with the results of Sadeghi et al, (2022), Buhler et al, (2021), Adekunle & Fatima (2020), Ally & wark (2020), Benešová & Tupa (2017), Devi et al, (2020), Eleyyan (2022), Jung (2019), Pham & Tran (2021), and Gleason (2018). It is suggested that the Ministry of Education assigns universities to implement the characteristics identified in accordance with the fourth industrial revolution, so that they can put the skill requirements of this revolution in their educational agenda to develop the competencies of students and graduates. It is also suggested to implement a network communication model between universities and business environments. The last suggestion is to hold various workshops and seminars in universities with the cooperation of companies and industries active in new businesses.