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Assessing the fourth industrial revolution: from a human resource management perspective

Abstract: This study investigates the impact of increasing digitization, specifically Industry 4.0, on the labor market from the perspective of human resource specialists in the cosmetics industry in Baku and Sumgait. Using a mixed-methods approach that includes both synchronous (phone, Skype) and asynchronous (email) communication, data were gathered from 20 HR managers. The study focuses on HR professionals' views on digital transformation's effects on recruitment, wage differentiation, and workforce training. Findings suggest a growing need for advanced technological skills, highlighting the gap between current employee capabilities and those required for Industry 4.0. The study also underscores the importance of proactive training and adaptation strategies to navigate the digital transition, emphasizing a coordinated approach involving government, employers, and workers. As organizations increasingly adopt Industry 4.0 technologies, HR specialists anticipate challenges such as a shortage of skilled labor, potential wage disparities, and increased competition for tech-savvy employees. The findings call for an emphasis on quality and adaptability in workforce development to sustain employability in a rapidly evolving digital landscape.
Keywords: Industry 4.0, human resources, digital transformation, labor market, workforce training, technological skills, digitalization, cosmetics industry, Baku, Sumgait.

Összefoglalás: A jelen tanulmány a növekvő digitalizáció, különösen az Ipar 4.0 munkaerőpiacra gyakorolt hatását vizsgálja a bakui és sumgaiti kozmetikai ipar humánerőforrás-specialistái szemszögéből. A szinkron (telefon, Skype) és az aszinkron (e-mail) kommunikációt egyaránt magában foglaló vegyes módszerrel 20 HR vezetőtől gyűjtöttek adatokat. A tanulmány a HR-szakemberek nézeteire összpontosít a digitális átalakulásnak a toborzásra, a bérek differenciálására és a munkaerő-képzésre gyakorolt hatásaival kapcsolatban.

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Az eredmények azt sugallják, hogy egyre nagyobb szükség van a fejlett technológiai készségekre, rávilágítva a szakadékra a jelenlegi munkavállalói képességek és az Ipar 4.0-hoz szükséges képességek között. A tanulmány hangsúlyozza a proaktív képzési és alkalmazkodási stratégiák fontosságát a digitális átállásban történő eligazodásban, hangsúlyozva a kormány, a munkaadók és a munkavállalók bevonásával zajló összehangolt megközelítést. Ahogy a szervezetek egyre inkább alkalmazzák az Ipar 4.0 technológiákat, a HR-szakemberek olyan kihívásokra számítanak, mint a szakképzett munkaerő hiánya, a lehetséges bérkülönbségek és a technológiailag hozzáértő alkalmazottakért folyó verseny. Az eredmények arra hívják fel a figyelmet, hogy a munkaerő-fejlesztésben a minőségre és az alkalmazkodóképességre kell helyezni a hangsúlyt, annak érdekében, hogy fenntartsák a foglalkoztathatóságot a gyorsan fejlődő digitális környezetben.
Kulcsszavak: Ipar 4.0, humán erőforrás, digitális átalakulás, munkaerőpiac, munkaerőképzés, technológiai készségek, digitalizáció, kozmetikai ipar, Baku, Sumgait.

Introduction

The workforce experiences significant turning moments as a result of the influence of globalization and technological advancements on working life. The concept of work has begun to change in the digital working life with artificial intelligence and the substitution of labor by robots leaves the workforce facing new challenges. Flexible working practices, which are increasingly increasing in working life, deregulation approaches to attract technology and global powers to their countries, and legal policies implemented against the workforce, damage the basis of labor in working life. As new technologies become increasingly established in working life, flexible practices take on more political content, increasing criticism of the concept of work. The majority of criticisms center on the idea of work's temporal and spatial dimensions. It is believed that the idea of work has become timeless and spaceless, gradually eclipsing the idea of overtime. It is stressed that numerous indications that characterize employment are obscured by the possibility of being connected to work at any given time. The discussion of this scenario is based on the idea that the concept of work, together with the integration of technology into globalization, necessitates working around the clock and blurs the boundaries between work and personal life. It should be emphasized that this study does not stand on the line against change in this process where Industry 4.0, designed with artificial intelligence, is being implemented. It just wants to express the process under headings that can affect the workforce, based on the thoughts of human resources professionals.

The workforce is struggling to survive in a working life where they must always keep the switch on and compete with machines in the fight against artificial intelligence.

The idea of a new, flexible, technologically integrated way of working is likewise supported by the European study. In the UK, one in three employees checks their e-mails before 08:30, and 90% agree to be reachable outside working hours [1].

Employees must adjust to the new job form's patterns to preserve and enhance their employability in the face of rising unemployment rates and increased labor market competition. The labor force has to change into a qualified structure, particularly to combat artificial intelligence. It emphasizes how important it is for technical advancements and labor qualifications to rise. Workforce qualifications are changing due to factors like higher education levels, the idea of lifelong learning, and the requirement for vocational training that keeps up with technological advancements. In a workplace where smart factories, the internet of things, cloud computing, and cyber systems define artificial intelligence, workforce credentials, production organization, working life regulations, and educational policies must all change along these lines [2].

One of the topics of discussion created by technology in the labor market is gender inequality. It is seen that the digitalization process is rapidly filling the positions of mostly female employees. Female employees are mostly employed in areas such as administrative services and customer services. The digitalization process that started in these areas with software programs and the growth of technology in these positions filled by female employees pose a great threat to the female workforce [3]. A contentious facet of technology is the allocation of wages within the labor market. A further factor supporting the human capital approach is the ability of employees to possess qualifications that are compatible with the technology. However given their growing workload and expertise, the rising R generation's incomes have not increased, raising concerns about the system. The growing disparity and variety in pay point to a rise in unfavorable working conditions.

In the study, first of all, the conceptual framework of digitalized working life will be conveyed and its appearance in the world will be discussed with numerical examples. Afterward, the process and effects of the separation between mental labor and physical labor that started in the workforce with digitalization will be discussed. The findings section will present the viewpoints of human resources professionals following these in-depth parts based on the literature.

The results are interpreted and a framework for consideration of the potential effects on the workforce is established in the conclusion section.

[1] Adolph, S.–Tisch, M.–Metternich, J. (2014): Challenges and approaches to competency development for future production. *Journal of International Scientific Publications – Educational Alternatives,* 12., (8.), pp. 1001–1010.

[2] Bratton, J.–Gold, J. (2017): Human resource management: theory and practice. Human Resource Management: *Theory and Practice.*

[3] World Economic Forum (WEF) (2018): *The Global Competitiveness Report.* http://www3.weforum.org/docs/

Methodology

Population and Sample

What impact the growing digitization of the workplace is expected to have on the labor market is the study's research topic. The purpose of this inquiry is to examine the perspectives of human resources specialists who govern the labor market.

Predicting the change experienced and the Figure it will portray would be more accurate for human resources specialists, who are always keeping a close eye on the staff through training programs, compensation systems, and recruitment procedures. In this regard, data was collected by establishing synchronous communication (cell phone and Skype) with human resources experts and asynchronous communication (e-mail) with some of them. E-mails were used to pose questions before simultaneous communication. They were able to think through the questions and provide more precise analysis by using this strategy. The literature on qualitative data methodologies states that synchronous and asynchronous interview techniques can be used to collect data via phone, Skype, and E-mail (James, 2016: 281).

Human resource managers employed in Baku and Sumgait's cosmetics industry make up the research population. Convenience sampling was employed since it is challenging to contact every member of the general population for the study owing to scheduling conflicts and budgetary limitations. It is a non-random selection technique based on population initiative and accessibility. It appears adequate to make an opinion regarding the research question's answer, despite its poor representation of the general population. Human resources managers who volunteered to work voluntarily and were contacted through reference contacts were sent a questionnaire.

To facilitate a more honest discussion of the subject and protect the reputations of the participating companies, all personal information about the participants was concealed. It is not claimed that the study universe is representative of the entire cosmos.

Data collection tool

Among the qualitative research approaches available, the semi-structured interview method was selected for the study. A structured questionnaire was utilized because it was assumed that the participants knew something about the research issue because of their occupation. Literature and expert opinions were used to create question designs.

In creating the first question design, the understandability of the questions and their ability to answer the research question were evaluated by academic experts [4]. Academicians whose expert opinion was requested were asked to read the prepared questions and to point out expressions that were difficult to understand or were not appropriate to the research question.

Academicians were asked ”What do you think this question means?”, ”Do you think the question expressions are appropriate?” Among the qualitative research approaches available, the semi-structured interview method was selected for the study. A structured questionnaire was utilized because it was assumed that the participants knew something about the research issue because of their occupation. The questions were reviewed based on the feedback received, and the survey was re-evaluated and given its final form.

The questionnaire consists of 5 demographic questions and 11 open-ended questions evaluated in 3 different dimensions. These dimensions; Opinions about Industry 4.0 are classified as opinions about the reflection of digitalization on the participants' professions and their opinions about the labor market. Some questions asked in the research are as follows: ”How do you evaluate the effectiveness of artificial intelligence applications in recruitment processes?

How do you think the labor market will be affected by the digitalization process?” What are your thoughts on wage differentiation in labor markets with digitalization? How should human resources departments prepare the workforce for the change process?, Industry 4.0 in your company. Is there any budget allocated for this?

[4] Dhanpat, N.–Buthelezi, Z. P.–Joe M. R.–Maphela, T. V.–Shongwe, N. (2020): Industry 4.0: The role of human resource professionals. *SA Journal of Human Resource Management/ SA Tydskrif vir Menslikehulpbronbestuur,* 18., (0.).

Data Analysis Method

The data obtained after interviews with 20 participants were analyzed with Nvivo, a qualitative data analysis program. This program systematically evaluates and classifies data.

Findings

Demographic Findings

Of the 20 participants in the study, 12 were women and 8 were men. The average age of the sample was 38 years. (youngest age is 25, oldest age is 45) The education level of the majority of the participants is a master's degree. There are 13 master's degrees and 7 bachelor's degrees. Their industry experience is an average of 17 years. The minimum period of employment in the institution is 2 years and the maximum is 5 years.

Table 1. Demographic Characteristics of Participants

№	Gender	Age	Educational Status	Working Time in the Sector	Working Time in the Institution
1	Woman	38	Master Degree	17	2
2	Woman	36	Master Degree	14	3
3	Male	38	Master Degree	18	4
4	Woman	40	License	20	5
5	Male	37	Master Degree	18	3
6	Male	36	Master Degree	16	2
7	Male	42	Master Degree	21	3
8	Woman	37	Master Degree	16	3
9	Woman	35	Master Degree	12	3
10	Woman	36	License	13	4
11	Woman	36	Master Degree	14	2
12	Woman	40	License	17	3
13	Male	36	Master Degree	14	4
14	Woman	37	License	16	4
15	Woman	42	License	21	5
16	Male	45	Master Degree	23	3
17	Male	39	Master Degree	21	2

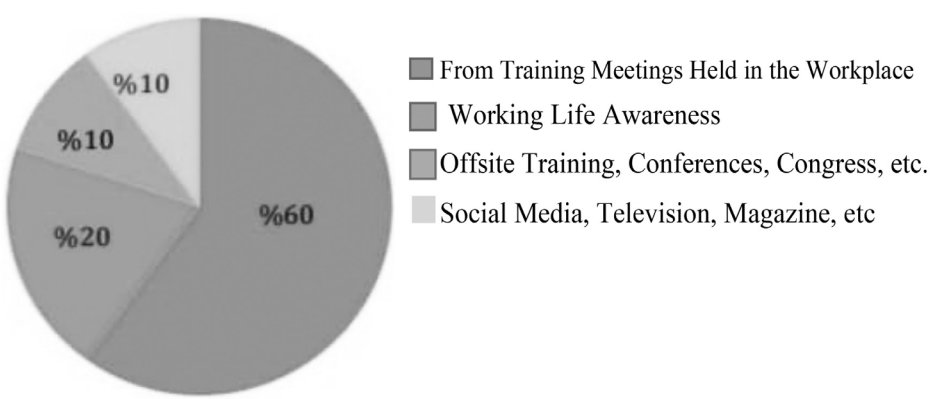
№	Gender	Age	Educational Status	Working Time in the Sector	Working Time in the Institution
18	Woman	35	License	15	4
19	Male	38	License	17	5
20	Woman	38	Master Degree	19	2

Source: Compiled by the author.

Participants' Opinions on Industry 4.0

The main goal of the study was to find out what human resources experts thought about Industry 4.0. Every human resources specialist claimed to be informed on Industry 4.0. They claimed to have attended training sessions on Industry 4.0 that provided them with in-depth knowledge *(Figure 1)*. They "watched with astonishment the point that technology has reached, that they will work with robotic colleagues in the future, and that they sense the possibility that the utopian films they watched about the future may come true very shortly," stressed the individuals who received information through workplace training.

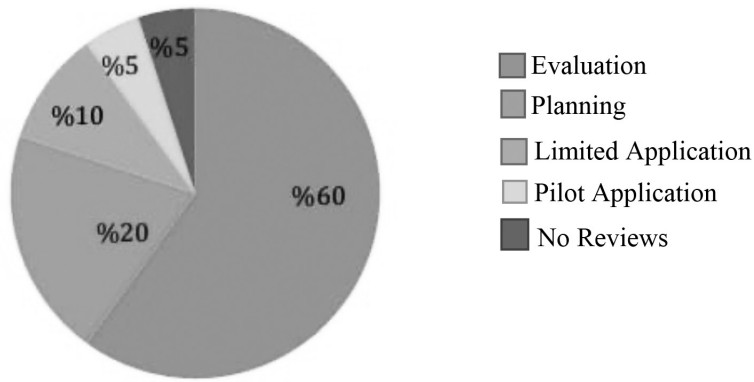
Figure 1. How to Learn About Industry 4.0



Source: Compiled by the author.

When asked what phase of Industry 4.0 their firms were in, human resources experts responded *(Figure 2)*. The responses provided are encouraging for our nation. It is seen that most of the human resources professionals' companies have allocated a budget for Industry 4.0 and have started the evaluation phase.

Figure 2. Implementation Stage of Industry 4.0 in Companies

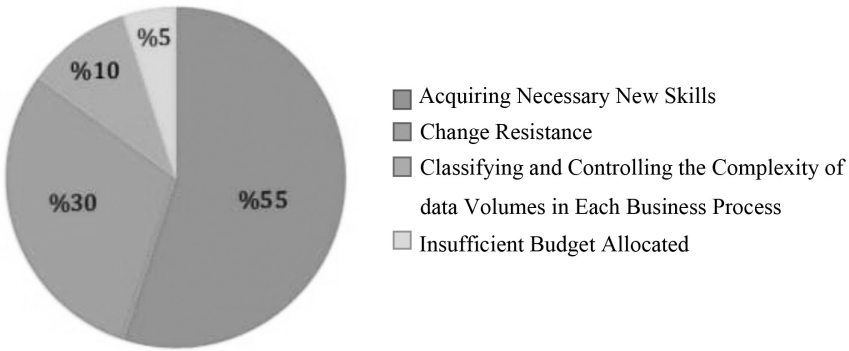


Source: Compiled by the author.

When questioned about the largest obstacles they might encounter in putting Industry 4.0 into practice, the majority of HR experts emphasize the scarcity of skilled labor *(Figure 3)*. Here are a few responses to this question that participants have provided. ”Technology skills are severely lacking, particularly for individuals employed in the industrial process. Our current technological skill needs map profile is not comprehensive enough. The most crucial and essential component of this job is training.

We began by creating distinct training curricula for every department. ”We have analyzed it well, the biggest challenge is the skill changes we are looking for in our employees as the way of doing business becomes digital”.

Figure 3.



Conclusion

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The study's most remarkable finding is that employees are held accountable for their ability to adjust to change during the digital transformation process. The human resources department is planning its training more along the lines of dealing with resistance to change than with professional knowledge's adaptation to technology. Some people believe that employees should pursue technology-based and vocational training.

[5] Fray, C.–Osborne, M. (2017): The Future of Employment: How Susceptible Are Jobs To Computerisation? *Technological Forecasting and Social Change,* 1., (14.), pp. 254–280.

[6] Huws, U. (2013): The Making of A Cybertariat: Virtual Work In A Real World. *The Monthly ReviewPress,* New York.

It has been predicted that the labor market's transformation will lead to a rise in competition, a need for more qualified workers, difficulty finding employment, the creation of new professions and job descriptions, and the creation of a more productive workplace with fewer employees. It is anticipated that as competition grows, a new class of workers focused on skilled labor will emerge. It is believed that when the human capital strategy is prioritized, the diverse pay structure would diversify and lead to a (natural) disparity in income. It is anticipated that there will be a rise in the organizational issue within the industrial relations system, where individual bargaining becomes more prominent and the traditional structure is altered. It is advised that workers enhance their digital abilities and receive education in digitally oriented fields. It is underlined that the workforce and unadaptable working conditions have entered a massive vortex due to artificial intelligence [6].

The study's conclusions show that enhancing workforce competencies is deemed necessary before pursuing a significant incentive in the context of digital transformation. The workforce's rising caliber is crucial to the digital transition. Prioritizing quality is deemed necessary for enhancing employability and accelerating the digital transformation process in the workplace, where artificial intelligence plays a prominent role. From this perspective, the crossroads for the part of the workforce that does not have these qualifications is on the verge of a huge cliff. However, reflecting on the digitalization process through discussions of qualification or deskilling may run counter to the inevitable reality that change reveals.

It is thought-provoking that the process should be normalized by leaving what the employer should do to the workforce. The new skills that the workforce has to develop in terms of adapting to new technologies under the title of lifelong learning may cause anxiety and stressful situations. This burden left on the shoulders of the workforce and also expected to be covered by the worker's wages for his labor will create another vortex. This burden left on the shoulders of the workforce and also expected to be covered by the worker's wages for his labor will create another vortex. The feeling of uselessness on the part of the workforce can create a working environment lacking job satisfaction for both parties, with inefficient work output on the part of the employer. Therefore, the process should not be viewed from the employer's perspective, where skilled labor can be easily substituted for each other. A mission should be undertaken to reveal the workforce qualifications needed within the scope of Industry 4.0 education and active employment policies. This mission should be addressed together at the pillars of government, employer, and workforce.

Change and uncertainty will therefore always be a part of life. Being adaptable is the only way to properly navigate these procedures. Therefore, all segments, from the state to the unions, from the employer to the workforce, need to be able to undertake their responsibilities with social awareness by analyzing the social, social, and economic added values of the current process. It will be necessary to evaluate the process with great sensitivity, from a solidarity perspective, by placing the acquired rights of the workforce on strong legal grounds. Otherwise, serious costs may be paid to the workforce. To prevent this result from occurring, it is hoped that the study will shed light on future research on topics that include a disciplined approach to working life, discuss the future of the workforce, and address the change in labor markets.


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