

**Tverdushka T.,
Stoliaruk K.**

DIGITALIZATION IMPACT ON WORK QUALITY AT THE ENTERPRISE OPERATIONAL LEVEL

The object of research is the work quality of operational staff. One of the most problematic places in the introduction of new production technologies is the adaptation of personnel to digital transformation. Understanding and systematic management actions of managers can lead the company to business growth, make it more flexible through the proper use of digitalization as a potentially important component of business strategy.

Methods of logical generalization and analysis are used in the analysis of literature sources on the research topic. The work quality at the enterprise operational level was considered in two dimensions: the quality of work results and the quality of working life. During the sociological study at machine-building enterprises is developed a conceptual model of the interaction between work tasks, methods of labor organization and technological tools. According to the expert potential consequences assessment of the impact of digitalization on the operational staff work quality, the highest scores are given to the following factors: work intensity; content of work tasks; control over work; learning; motivation and work life balance; health; rights; career management. The Analytical Hierarchy Process, which allows to determine the components of the adaptation system of personnel to digital information and to form an algorithm for choosing the optimal version of the system for the enterprise, is also used.

The results of the presented study confirm the insufficient level of workers and industrial engineers readiness to implement changes related to the use of digital tools. The results provide a practical basis for the enterprises management to form a hierarchical structure of employee adaptation system to digital transformation. Presented system will be the projects framework for production technologies modernization, labor processes improving, staff training and the successful implementation procuring of digital transformation based on the model of interaction between work tasks, methods and technological tools at the operational level of the enterprise.

Keywords: *management strategy, digital transformation, R&D planning, working life quality, career management.*

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1. Introduction

Today's turbulent business environment is characterized by new technological breakthroughs in many industries, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things, 3D printing and autonomous vehicles. The introduction of new technologies in the business environment is called digitalization. The rapid development of digital technologies directly affects the population life quality, the economic efficiency of business and promotes the spread of new forms of work organization. The VUCA environment (volatility, uncertainty, complexity, ambiguity) is adjusting quality assurance, as it extends the criteria for employee competence and performance – currently, among other things, career competence is at the forefront. It is both the degree of people readiness for rapid professional change, and the ability to maintain their own willingness to maneuver and be professionally mobile, adaptable to the constantly changing requirements of the chosen profession. This can be achieved by providing a high level of career education by enhancing the role of career management.

The results of theoretical and applied studies indicate that the new economy, with its information and commu-

nication, networking, nanotechnology, will increasingly cause significant changes in the employment growth and structure. These changes are manifested in the fact that labor activity becomes at the same time the embodiment of innovative and traditional labor, intellectual and physical labor. Indeed, even in industries where physical labour persists, it is gradually saturated with the innovation and intellectual component [1]. Awareness of the importance of the human factor, in particular the experience of staff and the organizational culture, was deepening in the field of digital transformation. Despite this, enterprise initiatives have focused mainly on the modernization of consumer relations and the development of basic infrastructure. Sometimes managers themselves do not fully understand what is meant by digitalization. Some of them believe that digitization is an upgraded synonym of the functions performed by the IT department, others focus on digital marketing or sales, but few have a holistic view of digital transformation.

According to McKinsey's consultants, digitalization is a quick, free and impeccable ability to connect people, devices and physical objects anywhere. Approximately 20 billion units are projected to be connected by 2025 [2]. The consequence of digitalization is the growth of data

volumes and the need to analyze them, as well as the spread of automation of both processes and solutions. This leads to the emergence of new business models in various areas of business.

However, when it comes to the real understanding of changes in the work nature, the formation of work tasks, organization methods, quality requirements and the career importance for employees, many enterprises do not make systematic efforts in this area.

Therefore, *the object of research* is work quality at the enterprise operational level. And *the aim of research* is to study the impact of digitalization on the work quality in the enterprise, focusing on the operational level and specific professions, such as industrial engineers and production line workers and to elucidate the factors of this gap in digitalization. This will help managers of the enterprise to raise awareness of the need for digital skills, to expand their availability through the training system. It is important that all employees in the company have the opportunity to adapt to changing technologies and make the most of technological progress to develop their careers.

2. Methods of research

The concept of digitalization encompasses a range of diverse but complementary technological developments, forming the so-called «Fourth Industrial Revolution» [3]. Digitalization refers to a complex array of technologies, some of which are still in an early stage, and involves the use of tools to convert analogue information into digital information. This increases the presence and use of connected databases, scheduling tools as applications for devices such as computers, tablets, or smartphone applications. A number of studies have been devoted to these problems, the results of which have been covered in a number of publications [4].

The increasing role of knowledge, information and innovation, the development of information and communication technologies, lead to the transformation of the employee's work functions and the content of the work – cognitive processes become the predominant components [5]. There is an intellectualization of work, that is, an increase in the level of information content, an increase in the share of efforts to find and process information in the overall structure of workloads. Author of [6] notes that in modern conditions the emphasis is shifting from the ability and skills to work towards new social competencies, among which the responsible attitude to the business, the enterprise, the product of its activity and clients are paramount. Leadership, creativity, motivation to innovate, and the ability to take justifiable risk are important.

Among these social competencies are those that demonstrate the ability to manage their professional lives in the face of changing nature and content of work, in particular:

- developing themselves through careers and vocational education; awareness of the career;
- developing career management and employment skills [7]. Pointing to the importance of continuous professional life management the career advisers of the International Department of the Zentrale Auslands- und Fachvermittlung (Germany) emphasize the need to increase the number of practicing professionals in career consulting and the confirming importance their qualifications [8].

Approaches to determining the nature of work quality in the enterprise and its indicators have been developed by international organizations since the beginning of the millennium. Among other studies, the development of a concept that combines work quality issues and employment is gaining [6, 9–11].

In launching its Decent Work Program, the International Labor Organization (ILO) has initiated reflections on such an important aspect of work as quality of work and developed a conceptual framework with its indicators under the auspices of a UN agency for the analysis of employment statistics [12]. Decent work and its dimensions have been integrated into the policy level with the Millennium Development Goals, the central global strategy of ILO and the UN [7].

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) has carried out considerable research into the conceptual aspects of quality of work and its outcomes for workers. Eurofound has been working on quality of work and employment since 2002 and has continued to do so ever since [13, 14]. In particular, Eurofound moved this concept to the approach considering the work sustainability throughout employee working life and beyond [15]. Employment quality remains one of the EU's goals set out in the Europe 2020 Strategy, although progress in this area seems to be purely rhetorical, with a strong focus on labor market supply and employment growth rather than improving work quality [16, 17]. There is currently no specific action plan or policy to improve the work quality in the EU. On the contrary, the development of the so-called «economy», which assessed its economic potential, raised serious concerns about the very poor quality and sustainability of the work creation [18].

In [6, 9–11] define work quality as an integral indicator, characterizing working conditions in a broad sense and allowing to consider the realization degree of employee needs and interests (intellectual, creative, moral, organizational, communication, etc.). The basis of the work quality concept is:

- provision of employee satisfaction in the course of self-realization of achievement in work as the main motive in comparison with salary and career;
- principle of labor democracy (democracy at work), which at the enterprise level means an extension of the employee's personality autonomy and the ability to participate in the management of the enterprise and in the ownership;
- development of the employee in the concept of working life quality provides opportunities for constant professional growth, development of its various abilities.

In addition, the Organization for Economic Cooperation and Development has developed a framework for measuring and evaluating the work quality, which considers three objective and measurable dimensions [19]. Together, they provide a comprehensive assessment of the work quality:

1. Quality of earnings reflects the extent to which earnings contribute to the well-being of workers in terms of average earnings and their distribution among the workforce.
2. Labor market security covers those aspects of economic security that are associated with the risks of job loss and economic value for workers. It is determined by the risks of unemployment and unemployment benefits.
3. The work environment quality includes non-economic aspects of work such as the work content, working time

arrangements and relationships in the workplace. They are measured as a frequency of work intensity characterized by high job requirements and low labor resources.

However, some studies suggest that increased productivity can lead to higher wages and reduced working time [20], so the overall impact of digitalization on economic productivity is controversial. Researchers note that in the past, innovations and technologies were not fully realized in just a few years [18]. In this research, they suggest that organizational constraints on technology implementation are undervalued, whereas technology efficiency is overstated.

Consequently, researchers in [10] agree that digitalization is polarizing and continues to polarize low-skilled jobs and workers in the labor market. This is because digital technology replaces manual tasks that are often performed with low levels of skill and education.

Because of this, jobs are polarized to the tasks traditionally performed by skilled workers at the lowest and highest levels in the enterprise [20].

One of the main problems related to digitalization author of [21] formulates this way: Modern societies, as societies of constant acceleration, are increasingly lacking the mechanisms of society adaptation to the modern conditions. In Germany, the majority of the economically active population believes that the stresses and volumes of work will increase and that improving the work efficiency will not affect the life quality. What is more, the data contained in the report of the Minister of Labor of Germany Ursula von der Liean (2012) on the society social and psychological state indicate that 73 % of Germans fear that they will not be able to withstand the pressure of change, and 43 % of responders feel that work stress has increased in recent years [17].

Interesting is the results of the survey in the framework of the «Change Readiness Index (CRI)», according to the methodology of the International Audit Company KPMG. CRI defines a country's ability to manage and respond to challenges and threats that occur in the global environment. The results of a company's survey in the fields of mechanical and instrumental, automotive and electronics industries allow to calculate the CRI. In general, it was interviewed 421 companies in Germany on the topic of «Success in change». The poll took place in the spring of 2019, the second time since 2017. In 2019, the CRI was 55 on a scale of 1 to 100 points, down 3 points from two years ago. This slightly negative event is not dramatic, but it clearly shows that companies still have a long way to go [22].

It should be noted that digitalization affects the work quality in terms of available skills and objectives [15]. The EU job-quality study notes that economic digitalization has a major impact on labor transformation. Physical and routine tasks are replaced by machines, while the volume of intellectual and social tasks increases. The distribution of tasks varies even within a work or professional category. The detailed conceptual model of interaction between skills, tasks and technological tools and methods is illustrated in Fig. 1.

The study found that the work quality is related to the work task content. The content of the physical task has a clear negative correlation with the work quality, whereas the content of the intellectual task has an even stronger positive correlation.

Work tasks		Methods of work organization	Technological tools
	Skills	Autonomy	
Physical tasks Tasks aimed at the physical manipulation and transformation of material things	– Strength – Dexterity	Extent to which the worker is free to carry out the task as they need	
Intellectual tasks Tasks aimed at the manipulation and transformation and the active resolution of complex problems	– Information processing (literacy&numeracy) – Problem-solving (Info gathering&creativity/resolution)	Teamwork Extent to which the task is carried out in direct cooperation with a small group of co-workers	Machines Information& communication technologies
Social tasks Tasks whose primary aim is the interaction with other people	– Serving/attending – Teaching/training/coaching – Selling/influencing – Managing/coordinating	Routine Extent to which the task is repetitive and standardized	

Fig. 1. Conceptual model of interaction between work tasks, methods of work organization and technological tools (developed by the authors on the basis of [20])

The negative association between physical tasks and work quality is particularly strong for convenience and strength, while the positive link between intellectual tasks and work quality is strongest for education, literacy, and the humanities. The social tasks content is also positively correlated with the work quality, but it is much weaker than for intellectual tasks. Similar findings on the impact of digitalization on work quality, based on a detailed analysis of 12 work profiles (ECORYS), are given in the corresponding report [15].

3. Research results and discussion

In order to study in depth the impact of digitization on the work quality, a study at the automotive enterprises of Ukraine is conducted through interviews and focus groups with employees. The specific aspects were taken such as the employee experience at the enterprise operational level, namely: industrial engineers and workers of production lines, and take into account their assessment of the impact of digitization on tasks related to their daily work.

The task formation for industrial engineers depends on the market actual situation, industry innovations, which affects a certain type of task implementation and timeframe (urgency requires time to adapt existing production structures). It was planned to analyze the work quality from two sides:

- 1) work quality (company);
- 2) working life quality (employee).

The employee was asked to provide a «compliance indicator» to list the possible effects of digitalization on the work results. The list of metrics for determining the potential effects was based on the employees' answers in Fig. 2.

In general, the Analytical Hierarchy Process (AHP) consists of the following stages [23]:

- determining the purpose of the task to be solved;
- hierarchical mapping of the task, starting from the goal, through intermediate levels of the hierarchy (the criterion on which subsequent levels depend) to the lowest level (which is usually a list of alternatives);
- constructing the required number of pairwise comparisons one matrix for each element adjacent from above to the appropriate level of the hierarchy;
- checking the consistency of expert opinions;
- formation from a group of paired local priorities comparisons, which characterize the influence of nu-

merous elements on the element adjacent from above to the corresponding hierarchy level;
 – determining global priority;
 – checking the consistency of all hierarchies.

Fig. 2 summarizes several potential effects of digitalization on various work aspects. In order to evaluate the impact of digitalization, it is necessary to translate the qualitative judgments of experts into quantitative indicators and, based on the method AHP, choose the option of adaptation system of employees to digital transformation (ASEDT) at the operational level of the enterprise. Fig. 3 presents the algorithm for determining of ASEDT structure.

The hierarchical representation of the adaptation system of employee to digital transformation (ASEDT) structure selection task is shown in Fig. 3. This scheme of choice should be considered in conjunction with Fig. 2, which presents the

directions of the system and the main factors that affect the ASEDT structure. The qualitative analysis of the ASEDT structure shows that it is characterized by a large number of disparate interrelated subjective and objective factors. A scale of relative importance has been proposed for expert comparisons by experts [8, 20]: Experts make paired comparisons: how much more desirable is one or the other version of the structure of the system to meet each characteristic.

Survey results show that the least impact on work quality for industrial engineers (IE) is due to the following factors – Impact on earnings (63.8 %), Analytical and decision-making tasks (58.8 %), standardization of social relationships with colleagues 50 %, Loss of control over task contents (50 %). These factors have the least impact on production line workers: Career planning workshops and coaching (53.4 %), Social protection rights (48.6 %), Impact on earnings (45.8 %).

Metrics for determining the potential effects	Work dimensions that determine the potential effects	Industrial Ingenieur				Worker (production line)			
		Low	Medium low	Medium high	High	Low	Medium low	Medium high	High
Work intensity F1	Increased pace of work	41.20%	23.50%	29.40%	5.90%	11.60%	25.60%	23.30%	39.50%
	Intensification of work	38.9%	16.7%	22.2%	22.2%	7.0%	16.3%	18.6%	58.1%
Contents of tasks F2	Loss of control over task contents	50.0%	11.1%	–	38.9%	21.4%	23.8%	23.8%	31.0%
	Takes over routine analytical tasks	44.4%	5.6%	11.1%	38.9%	20.9%	25.6%	16.3%	37.2%
	Analytical and decision-making tasks	58.8%	11.8%	5.9%	23.5%	25.6%	25.6%	20.9%	27.9%
Control over work F3	Blurs boundaries between occupations or merges them	41.2%	11.8%	23.5%	23.5%	31.0%	7.1%	26.2%	35.7%
	Loss of control over working processes/methods	41.2%	11.7%	–	47.1%	20.9%	27.9%	18.6%	32.6%
	Monitoring of work and workers	41.1%	20.3%	5.8%	32.8%	13.4%	13.4%	20.3%	52.9%
Social skills F4	Performance oriented management	31.3%	18.8%	6.3%	43.6%	23.3%	9.3%	14.0%	53.5%
	Standardisation of social relationships with users	41.2%	23.5%	5.9%	29.4%	23.3%	7.0%	25.6%	44.2%
	Standardisation of social relationships with colleagues	50.0%	5.6%	11.1%	33.3%	34.9%	16.3%	11.6%	37.2%
Motivation and work life balance F5	Digital skills gap	38.9%	27.8%	22.2%	11.1%	14.6%	12.2%	19.5%	53.7%
	Impact on earnings	63.8%	12.1%	–	24.1%	45.8%	16.5%	15.4%	22.3%
	Blurs frontiers between work and social/family life	44.4%	11.1%	11.1%	33.4%	30.2%	11.6%	25.6%	32.6%
Health F6	Physical health outcomes	27.8%	16.7%	11.1%	44.4%	17.6%	20.6%	26.5%	35.3%
	Mental health outcomes	31.6%	5.3%	15.8%	47.3%	16.6%	11.1%	16.7%	55.6%
Rights F7	Social protection rights	50.0%	16.7%	11.1%	22.2%	48.6%	8.6%	17.1%	25.7%
	Right to disconnect	29.4%	23.5%	5.9%	41.2%	35.7%	19.0%	14.3%	31.0%
	L&D programs (hybrid skills)	20.2%	11.1%	28.5%	40.2%	43.2%	8.1%	24.2%	24.5%
Career management F8	Career planning workshops and coaching	50.0%	20.5%	19.7%	9.8%	53.4%	25.0%	15.4%	6.2%
	Career prospects and employment security	36.8%	10.5%	21.1%	31.6%	42.9%	8.6%	22.9%	25.6%

Fig. 2. Assessment of selected potential effects of digitalization on work quality and outcomes for workers

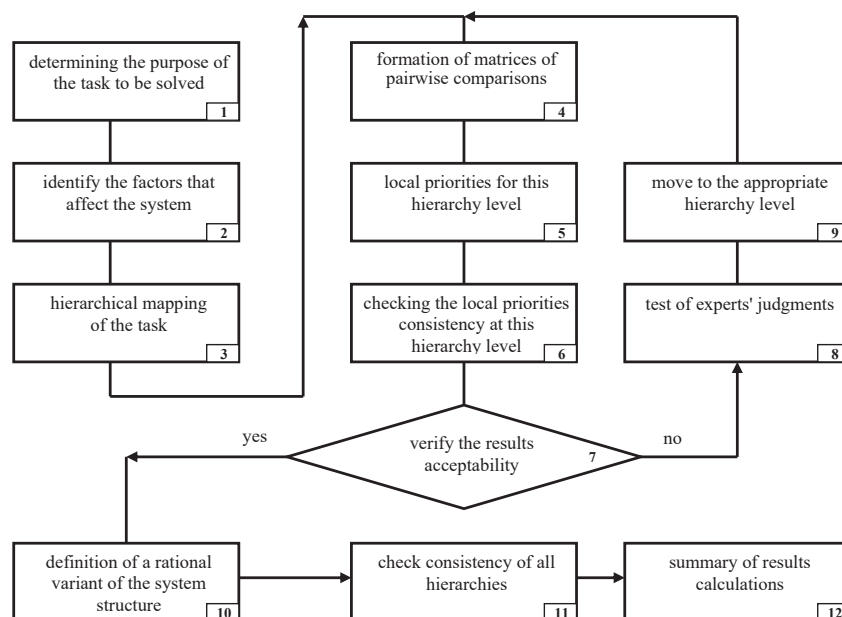


Fig. 3. The algorithm for structure determining of the adaptation system of employee to digital transformation (developed by the authors on the basis of [24, 25])

The most consistent effect on work quality for IE have: Mental health outcomes (47.3 %), Physical health outcomes (44.4 %), Loss of control over working processes/methods (47.1 %), Performance oriented management (43.6 %). Unlike engineers, the greater impact on the production line workers have: Intensification of work (58.1 %), Mental health outcomes (55.6 %), Digital skills gap (53.7 %), Performance oriented management (53.5 %).

The results of two groups' employees confirm that, for about two thirds of the respondents, the process of digital transformation led to the work revitalization and to higher control degree over work and employees, as well as increased monitoring of work processes and implementation of performance-oriented management. According to the respondents, there are also problems of physical and mental health. The impact of digitalization on the control and development of digital skills is also claimed to be important problem for about two in three employees of automotive enterprises. Survey results show that workers do not feel that digitalization has a significant impact on their earnings or their social protection rights.

Through focus groups, employees emphasized the positive and negative impact of digital tools and processes on the work content and the tasks they need to accomplish. The digital transformation has led to an increased workload. The information flow to be processed by employees (e-mails, files) has increased significantly. At the same time, the reaction time decreased. An email response is expected to be much faster than a letter or form. The reaction time limit is also set in the business process regulation.

When it comes to tasks, engineers report a negative aspect: the frequent occurrence of technical problems (machines and networks) or the lack of digital tools to do the work tasks. Others emphasize the need to adapt digital tools so that they can fully achieve the tasks they need. Some respondents mentioned that technical problems create accumulated delays and prevent employees from continuing their work, which can sometimes lead to frustration.

However, it also highlights some of the positive aspects of digitalizing the work content, mainly related to improving work organization by enhancing rationalization. Digitalization allows to work faster and have better access to the necessary information, minimizes the loss of information in a complex management and circulation system. Communication between different company departments, both in the workplace and between work systems, is more efficient. Respondents emphasize that the pace of work is now dictated by digital procedures and clearer timelines. They point out that there is often a discrepancy between the time theoretically devoted to information processing and the actual time required, which can vary from one person to another according to their mastery of digital tools. Several respondents said that digitization made some work more routine, thanks to greater simplification of tasks. But others express a positive view of the digital transition, which does not meet the usual objectives of allowing users to provide more purposeful services.

One of the negative effects of the digital transition that has been reflected is the loss of engagement with users, which leads to a sense of dehumanization of work done, or even the impression that the institution focuses more on digital tools than on users. The standardization of work schedules and work organization, introduced through the use of digital tools and processes, has created a sense of distance from work.

Furthermore digitalization enhances monitoring. The aspects to be controlled and tracked include the work performance (task progress, time required to complete tasks, interaction time with colleagues, etc.), as well as employee characteristics (working time, absenteeism, digital skills developed during training, etc.). All of this work metrics are not new and have already been part of the monitoring carried out by the employer. According to the respondents, the differences in the acquisition of digital skills depend on the individual characteristics of employees (age, gender, education).

The survey of two employees groups showed that the evaluation levels of personnel development training programs and perception of their career prospects are not consistent – despite the high rating of such programs (20.2 % – industrial engineers, 43.2 % – workers), uncertainty about their career prospects remain high (36.8 % – industrial engineers, 42.9 % – workers). The situation with career planning workshops and coaching was even worse – 50 % of industrial engineers and 53.4 % of workers awarded this aspect of career management in their organization with low marks. To date, the role of the individual in the career management process has increased significantly. The researchers argue identifying prospects in career consulting it is important «to identify personal and situational attributes that can effectively help individuals constructing their professional lives, and in successfully managing multiple and changing career trajectories – so different from the linear trajectories which characterized employment in the last century. Dimensions such as adaptability, work preparedness, hope, optimism, resilience and time perspective are already playing a crucial role. The so-called «Life Design approach suggests specific attention should be devoted to reflectivity, to awareness of changes and to the need to pursue multiple trajectories» [26]. Therefore, in the context of changes caused by the digital transformation, an extremely important function of the organization is to strengthen the work with career planning workshops and coaching staff.

The impact of digitization on the health of employees, both physical and mental, is also a subject that has generated many reactions in focus groups and questionnaires. A large number of respondents complained about visual problems due to intensive use of computers as well as musculoskeletal disorders such as tendinitis or back problems caused by prolonged immobility. Reduce the need to move – after a digital transition, cardiovascular problems can occur associated with the risk of increased obesity. Some respondents reported about the high fatigue after changing work assignments.

It should be noted that among psychosocial risks, the issue of harassment arising from interaction with colleagues is the subject of conflicting positions regarding physical and mental health. Some employees have acknowledged that the transition to digital work has led to a stressful situations increase, especially when colleagues expect an immediate response and rapid processing of their files when using digital tools. Therefore, the job digitalization is also linked to workers with an increase in the frequency of stress caused by increased workload through complex tasks and changes in organization and pace of work as a source of greater mental fatigue. As a result, there is a higher impact of psychosocial pathologies such as depression, mental exhaustion or burnout.

Thus, further action will be taken transferring of the qualitative judgments of experts into quantitative indicators and, based on the method AHP, choosing the rational

structure of ASEDT at the operational level. According to the highlighted elements of the ASEDT let's suggest identifying its eight components (F1, F2, F3, F4, F5, F7, F8) and a set of metrics for analysis. Authors of the study introduce the necessary symbols for the main presentation of the methodology in Table 1.

The hierarchical structure of ASEDT model is presented in Fig. 4. To construct a hierarchical model, let's use the conditional symbols of the ASEDT metrics, as is shown in Table 1.

After forming the definition of the most influential factors, let's use Fishburn's method [22] to measure the weight of the indicators. Each of the subsystems has the same value in the methodology for assessing the ASEDT, and therefore, they are characterized by the same importance of weight:

$$w1 = w2 = w3 = w4 = w5 = \\ = w6 = w7 = w8 = \frac{1}{8} = 0.125 \text{ or } 12.5 \%,$$

where $w1$ – work intensity; $w2$ – contents of tasks; $w3$ – control over work; $w4$ – learning; $w5$ – motivation and work life balance; $w6$ – health; $w7$ – rights; $w8$ – career management.

For subjective pairwise comparisons, let's use the scale of relative importance of the elements in relation to the general objective [24, 25]. For a group of matrices of even pairwise relations, sets of local priorities are formed which express their relative influence on elements of a higher level [20]. From here let's obtain a two-level hierarchical system for a comprehensive assessment of the enterprise's ASEDT of any activity.

The system in order to estimate the priority vector is normalized using the formula:

$$F = w_1 F_1 + w_2 F_2 + w_3 F_3 + \\ + w_4 F_4 + w_5 F_5 + w_6 F_6 + w_7 F_7 + w_8 F_8, \quad (1)$$

if

$$F_1 = 0.45F_{1(1)} + 0.55F_{1(2)}, \\ F_2 = 0.2F_{2(1)} + 0.2F_{2(2)} + 0.3F_{2(3)} + 0.3F_{2(4)}, \\ F_3 = 0.1F_{3(1)} + 0.4F_{3(2)} + 0.5F_{3(3)}, \\ F_4 = 0.5F_{4(1)} + 0.5F_{4(2)}, \\ F_5 = 0.6F_{5(1)} + 0.4F_{5(2)}, \\ F_6 = 0.35F_{6(1)} + 0.65F_{6(2)}, \\ F_7 = 0.8F_{7(1)} + 0.2F_{7(2)}, \\ F_8 = 0.5F_{8(1)} + 0.25F_{8(2)} + 0.25F_{8(3)}. \quad (2)$$

It should be noted that a possible construction of a multiplicative hierarchical two-level system is possible:

$$F_{i(2)} = F_1^{0.125} \cdot F_2^{0.125} \cdot F_3^{0.125} \cdot F_4^{0.125} \times \\ \times F_5^{0.125} \cdot F_6^{0.125} \cdot F_7^{0.125} \cdot F_8^{0.125}, \quad (3)$$

if

$$F_1 = F_{1(1)}^{0.45} \cdot F_{1(2)}^{0.45}, \\ F_2 = F_{2(1)}^{0.2} \cdot F_{2(2)}^{0.2} \cdot F_{2(3)}^{0.3} \cdot F_{2(4)}^{0.3}, \\ F_3 = F_{3(1)}^{0.1} \cdot F_{3(2)}^{0.4} \cdot F_{3(3)}^{0.5}, \\ F_4 = F_{4(1)}^{0.5} \cdot F_{4(2)}^{0.5}, \\ F_5 = F_{5(1)}^{0.6} \cdot F_{5(2)}^{0.4}, \\ F_6 = F_{6(1)}^{0.35} \cdot F_{6(2)}^{0.65}, \\ F_7 = F_{7(1)}^{0.8} \cdot F_{7(2)}^{0.2}, \\ F_8 = F_{8(1)}^{0.5} \cdot F_{8(2)}^{0.25} \cdot F_{8(3)}^{0.25}. \quad (4)$$

Therefore, it can be considered that the presented variant of ASEDT structure is currently rational for Ukrainian automotive enterprises [8, 20]. It should also be noted that the developed model is universal and allows the assessment of the impact of digitalization on work quality in an industrial enterprise, as well as groups of enterprises engaged in these activities or different ones.

Table 1

Explication of the adaptation system of employee to digital transformation

Metrics for determining the potential effects	Work dimensions that determine the potential effects	Symbols of metrics
Work intensity F1	1.1. Increased pace of work	F1(1)
	1.2. Intensification of work	F1(2)
Contents of tasks F2	2.1. Loss of control over task contents	F2(1)
	2.2. Takes over routine analytical tasks	F2(2)
	2.3. Performing analytical and decision-making tasks	F2(3)
	2.4. Blurs boundaries between occupations (combination of work tasks)	F2(4)
Control over work F3	3.1. Loss of control over working processes/methods	F3(1)
	3.2. Monitoring of work and workers	F3(2)
	3.3. Performance oriented management	F3(3)
Learning F4	4.1. Social skills (Loss/standardization of social relationships with colleagues)	F4(1)
	4.2. Digital skills gap	F4(2)
Motivation and work life balance F5	5.1. Impact on earnings	F5(1)
	5.2. Blurs frontiers between work and social/family life	F5(2)
Health F6	6.1. Physical health outcomes	F6(1)
	6.2. Mental health outcomes	F6(2)
Rights F7	7.1. Social protection rights	F7(1)
	7.2. Right to disconnect	F7(2)
Career management F8	8.1. L&D programs (hybrid skills)	F8(1)
	8.2. Career planning workshops and coaching	F8(2)
	8.3. Career prospects and employment security	F8(3)

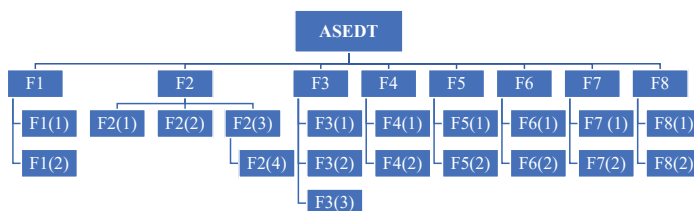


Fig. 4. Structural representation of the adaptation system of employee to digital transformation model: F1 – work intensity; F2 – contents of tasks; F3 – control over work; F4 – learning; F5 – motivation and work life balance; F6 – health; F7 – rights; F8 – career management

The conducted research has shown that the processes of digitalization have a significant influence on the work tasks formation and on the work quality at the operational level of enterprise, which includes the working life quality. The potential effects of digital transformation on career management and employees' perceptions of their career prospects are also outlined. Here are some comments on this aspect of the study.

Modern study fills breaks new ground by examining four dimensions of organization career management that are consistent with recent thinking about contemporary careers: supportive and developmental practices, development I-deals, individual responsibility, and internal consensus:

- Researchers propose to move from traditional management practices, when career advancement is tightly regulated, to supportive and evolving corporate career management tools. Examples are the use of career coaching, career planning workshops, or career self-assessments, which encourage employees to navigate their own career within, but not limited to, the current organizational setting.
- One way to make employees more proactive in managing their competencies, motives, interests is through an idiosyncratic agreement or I-deal: voluntary, personalized agreements of a nonstandard nature negotiated between individual employees and their employers regarding the terms that benefit each party.
- It is important that HR and line managers have the same understanding of employee career management, i.e. the only corporate approach is consensus on career management [27].

The importance of «collaboration» between the enterprise and the individual in terms of career management is also demonstrated by Deloitte's data. Organizations can adopt an active program to support people's reskilling, re-education, and career development. The 2017 Deloitte Global Human Capital Trends report rated L&D the second-largest issue among business and HR leaders, up from fifth only a year ago, and indicated that 83 percent of companies are re-engineering their career programs and some of the top practices in this area include:

- creating L&D programs to enable employees to develop hybrid skills; design thinking, visualization, project management, problem solving, communication, and other soft skills are vitally needed, and standard programs help create career – flexibility and a currency of consistent practices [28, 29];
- creating career paths and self-assessment tools to help employees find new jobs and new career paths within the company [13].

4. Conclusion

The approach, proposed in the article allows transform the qualitative judgments of experts into quantitative indicators based on AHP method. Experts form matrices of pairwise comparisons, calculate local priorities, and verify consistency of local priorities and the hierarchy as a whole, sequentially in the direction from the lower level of the hierarchy to the structure of ASEDT.

The research confirms that digitalization affects the economic fundamentals of business, competition in the market and work quality in all its dimensions, and it should play a central role in social dialogue programs as

a cross-cutting issue at the sectoral level and at enterprises. The consequence of digital transformation is a much more powerful data analysis, as well as the spread of process and decision automation.

To conclude, it is important to be aware of the different effects and outcomes of digitalization, in terms of employee health and work-life balance. Therefore, it is necessary to ensure the proper distribution of workloads between digital tools and work processes, and to guarantee the quality of the work results in the enterprise. For this purpose, it is necessary to update the monitoring system of the work results evaluation and its constant updating to flexible external environment changes. The company management should implement the adaptation system of employee to digital transformation at the enterprise operational level, which will include eight elements. The key elements will be the employees career management under unified corporate standards, access promotion to training, e-learning, staff qualifying and empowering their capabilities to bridge the digital divide, especially for older workers, and to develop new competencies related to changing work patterns.

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Tverdushka Tetiana, PhD, Associate Professor, Department of Business Administration, International Institute of Business (IIB), Kyiv, Ukraine, ORCID: <https://orcid.org/0000-0002-0647-4309>, e-mail: t.b.tverdushka@gmail.com

Stoliaruk Khristina, PhD, Associate Professor, Department of Personnel Management and Labour Economics, Kyiv National Economic University named after Vadym Hetman, Ukraine, ORCID: <https://orcid.org/0000-0001-9264-2024>, e-mail: Kristina_stolyaruk@ukr.net