Digital competence of employees and the value of human resources in the development strategy of enterprises

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Abstract. The article looks at the resource approach to strategy of development of enterprises in which priority attention should be given to formation, use and development of its human resources. When passing the administrative decisions the management of the enterprises should consider employees as the most valuable resource in competitive which is necessary to motivate and develop for achievement of strategic purposes of the enterprise. The purpose of the study was to conduct research of the industrial enterprises of St. Petersburg, which allowed to identify a number of problems associated with insufficient attention from the management to human resources of organizations. In addition, the objective was to substantiate the importance of developing digital skills and competencies of modern employees, as well as digital competencies. In modern conditions development of human resources, including their digital competences in line with new tasks of strategic development of the enterprises, becomes a particularly important direction.

1. Introduction

The authors hold the view that the management of Russian industrial enterprises should give priority to the efficient use and development of human resources in the development strategy of modern enterprises. At decision-making they should consider management of social resources as a complex integral system consisting of interconnected and co-operating subsystems, namely formation, use and development of human resources of the organization. Such approach to the personnel will allow the enterprise to transition to a qualitatively other condition raising its stability and expanding its functional and adaptive resources. At the age of digitalization, in order to survive or win the competition, organizations should begin to change dramatically, and one of the important areas for management is to develop the digital skills of employees [1].

2. Methods

Effective management of human resources helps the organization to win the competition for the achievement of its tactical and strategic goals. The authors conducted a study at the industrial enterprises of St. Petersburg. The study identified some problems stemming from the lack of attention by management to the development and application of social resources. Today the situation when employees start to work at high-tech production with the use of modern digital technologies is becoming quite usual. Modern research confirms a substantial gap in this knowledge and skills of people, for example, 44% of teenagers do not know the basic functions of generally applicable programs cannot independently install or update them [2]. The authors analysed several classifications.
of digital skills of employees and developed their own grouping of digital competencies consisting of six components: data literacy, creation of digital content for communication and cooperation, security in the digital environment, computer literacy, non-standard and critical thinking.

3. Results and Discussion

In modern environment of the companies activity there appears an objective necessity to universalize the use of all resources without exclusion, which the independent company possesses. The context of the resource universalization was earlier used in the papers of Brewster, but didn't reach its growth [3].

The authors hold the view that the management of Russian enterprises should give priority to the effective use and development of social resources in the development strategy of modern enterprises. Taking into account that enterprises are to be regarded simultaneously as an object and subject of the production activity, and they have their life cycle, caused by different functioning circumstances, the transformation process always implies revival, i.e. re-estimation of orients, values, social and cultural interaction of the employees, professional and inter-professional communication. Revival, in its turn, leads to the update of personal and team positions of the employees and processes of their inclusion into the performance increasing, that can be expressed in the increase of professional skills and qualification of the employees, spirituality and morality, culture of interrelations, social and psychological atmosphere in the team.

In the mid-90s of the last century, in the activity of the majority of domestic enterprises the strategy prevailed on profitable motivation [4], which didn't take into account social resources, in other words completely ignored them, increasing the intensity labor and working time. At this stage, viewpoints of some researches were not taken into account, particularly the importance of inclusion in the strategy both the goal-statement, objectives, content of the action plan, and a resource component based on the human-factors development [5].

In the Model of the Harvard Business School [6] in formulating of the enterprises strategy, the values of top management (ethical standards) and social responsibility were analyzed. In addition to the traditional work directions, the “School of Strategies” also identified those that characterized the system of personnel training, attitude to authority, professional skills development, behavior culture [7]. In fact, this study described the efforts of employees to achieve the company strategic goals and objectives, defined the concept of managerial psychology, investigated indexes that display employees' knowledge and skills, their experience, values and expectations and interaction patterns in the structure of social and labour relations. It should be noted that Chang and Campo-Flores [8] have put forward the task of improving the level and quality of employees life as the structural direction of the enterprise strategy. But this raises the problem of the possibility of including in the process of realizing this task resources incorporated in the activities of various groups of employees.

It should be noted that the companies development strategy is often developed with the involvement of specialized scientific organizations, or by middle management with regard to the performance indicators of work activities. The tasks of efficient social resources using, as a rule, are not included in the goals of the strategy. Perhaps the exception is the strategy Total Quality Control (TQC), in which along with general economic elements, interaction with suppliers and consumers, production cycle management, new products development, attention is also paid to the interaction of various vocational and qualification groups of employees. In fact, the interaction of various employee groups is based on coordinated goals, that are primary for each functional unit, organization of quality control circles, controlling, procedures for continuous collection and analysis of information about the enterprise performance.

Absence of attention to social resources in the enterprises activity leads, as a rule, to the increase of mistakes in decision-making, staff tiredness, professional burnout, loss of the loyalty and devotion of employees to the company. On the other hand, optimal using of these resources contributes to formation of the following situation:
- scientific and technical, technical and technological, economic components of the enterprise strategy are added with social information, describes the human capital and the mechanisms of its involvement into the transformation processes of the entire production and economical complex;
- the action plan as a requirement of the enterprise strategy realization is associated directly with certain actions of the individuals, professional, qualification and status groups of employees, that allows both executing controlling of action plan, and estimating its efficiency both for quality and quantity indicators;
- the moral and ethical, motivation and spiritual regulators of the social interrelations are developed in the process of the production and economic activity;
- the lack of competences, abilities and skills of employees is filled through professional and interprofessional communications;
- including of social resources into the production and economic enterprises’ activities contributes to the formation of a particular organizational culture and overcoming the limitations of the previously established subcultures;
- the formed behaviour pattern in the system of the enterprise organizational culture ensures the integration of all types of activities and reduces the appearances of various risks;
- employees interaction as part of the decision-making process is both an indicator of the social resources impact on their efficiency and quality, and the way for creation of conditions for a consistent social and psychological climate [9, 10, 11].

The resource element of the enterprises development strategy also facilitates to the subject-oriented activity and innovation orientation of management and organizational functions, including: functional, reflecting both the current structure of labour specialization, and the supposed one, corresponding to professional potential of the team; professional qualification, which ensures the reasonable distribution of all resources available for structural units; demographic and social, characterizing the sex-age structure, its social health, employees professional possibilities in the transition to a more difficult and intensive work; social and political, reflecting the degree and relevance of professional and social employees qualities to the mission, strategy goals, objectives of the enterprise; social and psychological, defining the structure of values, professional orientations, interpersonal and intergroup relations and intra-industrial behavior in various situations of the companies activity.

Attention to the resource component of the companies’ development strategy increases the commitment and loyalty of employees to the enterprise, which are expressed in their desire to remain a member of a social and industrial organization, devotion to the values and goals of the organization, desire to make significant efforts for the advantage of the organization [12].

Modern enterprises activity is more often focused on the interaction processes between different status, qualification and professional groups of employees, their skills and orientation for the increasing of professional qualification, acquiring of new knowledge and job experience, availability of information about timely presence and quality of taken management decisions. F.J. Gouillart and J.N. Kelly claimed that the process of transformations in the companies activity should relate not only to the stage of their life cycle, competitiveness, sphere of technical and technological transformations, but should be subject-oriented in relation to the reframing, re-structuration, revival and updating [12]. Reframing is known to be frequently practiced in the neuro-linguistic programming theory and in the context of this study it presents itself other point of view of the company strategy and tactics in enterprises activity, other approach to the acceptance and realization of management decisions in terms of appearance both of internal and external factors of the companies functioning. Re-structuration processes cover not only the traditionally studied elements of the production activity of the companies, such as the labor devices and subjects, labor force, but also employees’ social and professional interests, their values and preferences, transformation the culture of the organization and behavior of certain employees and professional groups.

The study we conducted at 19 enterprises of the St. Petersburg industrial complex and a survey of more than 2,000 respondents (including by year: 2008 - 714; 2012 - 640; 2018 – 646). Throughout the ten-year research, we fixed differences in perception by various groups of employees' of management
decisions regarding their direction, resources availability, implementation mechanisms, the structure of key indicators of employee responsibility prior to their implementation, as well as tangible and intangible rewards. In our opinion, this perception is an evaluative emotional reaction of employees to the autocratic management style, inequity of the rewards, the humiliation in the workplace which the characteristic of some executives who ignore the opinion of subordinates, do not relate the decisions made to the requirements for professional competence, skills, work experience, physical and social health of employees. Emotional reactions to management decisions can cause a decrease or increase in employees working capacity, the formation of socio-psychological state, which determines the life cycle of working in a company.

The market type of management encompasses flexibility in the applying of professional qualifications, skills and work experience of each employee; development of civilized social and labor relations between employers and employees; encouragement of initiative and enterprise, involvement of employees in decision-making and implementation of the decisions; nevertheless in practice this resource is insufficiently used [11]. This conclusion is confirmed by differences in the behavior of vocational, qualification and status groups of employees. Among the enterprises management staff, the behavior is principally autocratic and, to a lesser extent, functionally role-playing; in the activities of engineering and technical personnel prevails active and innovative behavior; in the activities of the main and supporting manufacturing personnel prevails adaptive and active behavior, that indicates the inconsistency of behavioral attitudes and, as a result, the differences in the interests of employees.

In the course of the study, we found that 68.6% of engineering and technical personnel are developed such professional qualities as performance and accuracy; the need for advanced training and retraining indicated 77.0%; 70.7% - not only do not participate in the discussion of problematic issues, but do not follow the course of developments at the company; 61.0% - noted physical fatigue in the process of working activity; 56.0% - emphasized the inconsistency between their professional potential and work responsibilities; 53.0% - noted the lack of opportunities for initiative, creativity, independence in work performance; 70.0% - doubted the equity of the rewards; 82.0% emphasized that enterprises lack the conditions for innovative solutions. In a working environment, 55.0% are puzzled by their financial position; 72.0% - are set to increase the complexity of their work; 27.4% are afraid to take the initiative (according to the principle: initiative is punishable) because of the possibility of losing their jobs. Of the total number of respondents (N784), 57.0% consider it necessary to change the financial management system; 60.5% - personnel management system; 22.0% - production organization system; 18.5% - work performance monitoring system; 85.0% - style and methods of managing a team of enterprises. Among manufacturing personnel, 55.0% are concerned about their financial situation; 72.0% - have attitude to increase the complexity of their responsibilities; 27.4% are afraid to take the initiative (according to the principle: initiative is punishable) because of the possibility of losing their jobs. Of the total number of respondents (N784), 57.0% consider it necessary to change the financial management system; 60.5% - personnel management system; 22.0% - production organization system; 18.5% - work performance monitoring system; 85.0% - style and methods of the management.

The included observance of the business activity of 19 modern industrial companies allowed establishing that the composition of resources depends on the representation in the structure of the staff submission of different professional, qualification and status groups of employees, having a set of their own behavioral guidelines and attitudes to the result; on the events characterizing development of professional level of employees at all levels and stages of the companies life cycle; on prevailing demands of employees and possibility to meet them in the company; on the system of political, economical and social transformations in the public relation system, including the social and labor relations.

Purposeful management of human resources is an approach to personnel management, in which employees are considered as the most valuable resource in the competition, and should be motivated and developed to achieve the strategic goals of the company.
Human resources management is considered to be a complex integrated system consisting of interrelated and interacting subsystems, namely the formation, use and development of human resources of the organization. The subsystem of formation of human resources creates timely maintenance of qualitative and quantitative requirements in human resources for the existing strategies of the enterprises. At this stage, the basis of labour and creative potential of the organization and the prospects of its further growth is laid down. The subsystem of the use of human resources implements a set of functions aimed at providing conditions for the most effective implementation of intellectual, professional, creative and entrepreneurial abilities of employees to achieve their goals. The subsystem of human resources development is aimed at increasing the competence of employees in accordance with the objectives of strategic development of the organization. Competence is a behavioral characteristic necessary for the employee to successfully perform his or her working functions, reflecting the necessary standards of behavior.

When making managerial decisions it is necessary for the management of enterprises to approach the formation, use and development of human resources of the organization in a complex way, the result of which will be the transition of the entire organizational system to a qualitatively different state, increasing its stability and expanding its functional and adaptive capabilities [14].

Currently, there are four global transformations of production patterns, called industrial revolutions [15, 16]. They did not occur in different countries at the same time, but in general it is possible to name time periods when these changes in society took place. At the end of the 18th century, the first industrial revolution (Industry 1.0) took place, with the introduction of the steam engine machine industry. At the beginning of the 20th century, the 2nd industrial revolution (Industry 2.0) took place, when mass production using electricity and a conveyor belt was introduced. In the early 1970s, the 3rd Industrial Revolution (Industry 3.0) was followed by further automation of production using electronics and IT technology. Nowadays, the 4th industrial revolution (Industry 4.0) has become actual, which is characterized by the development of production based on the use of cyber-physical systems and machine-machine interaction; it means the emergence of a fully digital industry based on the mutual penetration of information technologies and industry.

Industry 4.0, which is associated with the mass introduction of cyber-physical systems in production, is comprised of Digitalization and Digital Enterprise. Based on the research data of Gapgemini Consulting and MIT Sloan School of Management, four groups of sectors of the economy have been identified by their digital maturity [17]. The first group of advanced digital production ("Digirati") included: high-tech industry, banking industry and retailers. Today, it is this group that benefits the most from digital transformation. The second group of companies ("Fashionistas"), for which there is already a need for digital transformation, change of business models, expansion of modern methods in management, included: telecommunications companies and companies from the tourism and hospitality industry. The third group ("Conservatives") includes insurance companies and companies from the energy and utilities sector. They are hindered by digital innovations for reasons such as professional care for risk reduction and legacy infrastructure. The fourth, the last group of digital maturity ("Beginners"), includes companies that have yet to build a digital transformation model: pharmaceuticals, industrial production and consumer packaged goods.

The modern VUCA-world, which has directly affected business, has radically changed the principles of its existence (VUCA is an acronym for English words volatility, uncertainty, complexity, ambiguity) [18]. The following conditions became relevant in it: volatility, uncertainty, complexity, ambiguity.

Today, various changes are constantly taking place in the functioning of industrial enterprises, so it is difficult to predict the future and implement forecasting tasks. Problems arising in business should be explained and solved taking into account many different factors, it is impossible to give an unambiguous answer to the arising questions. In order to cope with these changes in various sectors of the economy, modern digital technologies come to aid of.

Competitiveness of the enterprise directly depends on professionalism of human resources of the enterprise. In order to survive or to win the competition profound changes are required. At the age of
digitalization, these changes should begin with the development of relevant professional competencies among employees, such as digital literacy.

Until recently, the skills that employees needed to function effectively and, as a consequence, the organization's prosperity, were conditionally divided into two groups: hard skills and soft skills. Hard skills are the skills that employees need in order to perform their work at a high professional level. These are the production (technical or functional) skills used in direct work, also it includes fundamental knowledge about the mechanisms of business functioning, understanding of the organization as an integral system, economy, marketing, finance.

The soft skill group includes mainly communication and management skills, e.g. relationship building, ability to form and develop a management team, listening and understanding of the interlocutor, negotiation, persuasion skills, presentations, discussions, decision-making under uncertainty, leadership, creation of effective multi-cultural teams, conflict resolution, etc.

However, in today's world, in an era of digitalization of such a division, the skills required for the effective functioning of employees have become insufficient in the competency model. The current digital reality dictated the need to develop a new set of competencies - digital skills of employees.

The modern model of employee competencies has become composed of 3 groups of skills:
1. «Hard» skills.
2. "Soft" skills.
3. Digital skills.

Experts identify similar, slightly different components of digital literacy. Some experts highlight four components of digital literacy in the concept of digital literacy, such as [19]: literacy to use communication tools (man-machine, man-man); competence of thinking (critical thinking, creativity); competence in interaction with other people; ethics and issues of responsibility.

At the G20 Summit in 2017, the following five components of digital literacy were identified [20]:
1. Information literacy (knowledge of the specifics of information and its various sources, skills to find relevant information and compare it);
2. Computer literacy (knowledge of the computer device and its functions, skills of using the computer and similar devices);
3. Communication literacy (knowledge of the specifics of dialogue in digital communication, skills of using modern means of communication);
4. Media literacy (knowledge about media content and its sources, skills of news search and fact checking);
5. Propensity for technological innovation (knowledge of modern technological trends, skills of working with modern gadgets and applications).

At the III International conference "More than learning" in 2018, the following five components of digital literacy were identified: data literacy, communication and collaboration, creating digital content, security, problem-solving [1].

As a result of the analysis of the existing digital skills classifications [1, 19, 20], the authors compiled their own group of digital skills, consisting of six components: data literacy; communication and collaboration; creating digital content; security; problem-solving; computer literacy, unconventional and critical thinking (Table 1.).

| Areas of competence | Digital competencies (skills) |
|---------------------|-------------------------------|
| **1. Data literacy** | *Working with data, information and content in a digital environment, namely* |
| 1. Viewing, searching and filtering: articulate the need for information, use different strategies to find data, have access to digital content. |
| 1.2 Assess: analyse, compare and critically evaluate their validity and reliability. |
| 1.3 Management: organize, process, store, and retrieve them. |
### 2. Creating digital content

2.1 Digital content creation and development: create and edit digital content in different formats.
2.2 Integration and processing of digital content: modify and improve the quality of information and content, integrating them into a single body of knowledge to create new content.
2.3 Copyright and licenses: understand how data, information and digital content are copyrighted and licensed.
2.4 Programming: plan and develop clear and consistent commands for computer systems to perform specific tasks.

### 3. Computer literacy

3.1. Computer literacy: knowledge of the computer device and its functions, skills of using the computer and similar devices.
3.2. Solving technical problems: identify and solve technical problems that arise when working with computer and similar digital devices, from troubleshooting to more complex tasks.

### 4. Communication and collaboration in the digital environment

Digital tools and technologies can be used:

4.1 Interaction and cooperation: to use digital tools and technologies for collaboration and for the co-production of resources and knowledge, including the identification of appropriate communications in the digital context.
4.2 Exchange: exchange with others data, information and digital content.
4.3 Participation of public through digital technology: participation in public life.
4.4. Online etiquette: knowledge of rules and norms of conduct, and consideration of cultural and age diversity in the digital environment.

### 5. Security

5.1 Device protection: protect devices and digital content; understand the risks and threats in the digital environment; be aware of data security measures.
5.2 Protecting personal data and ensuring confidentiality: ensure protection of personal data and privacy in the digital environment; understand how to use personal information to prevent damage.
5.3 Protecting health and well-being: avoid health risks and threats to physical and mental health in the use of digital technologies; to be able to protect oneself and others from possible dangers in the digital environment; be aware of digital technologies for social well-being and integration.
5.4 Protect the environment: be aware of the impact of digital technologies on the environment and ecology.

### 6. Unconventional and critical thinking

6.1 Identifying needs and technological solutions.
6.2. Identify needs and select the necessary digital tools and technologies to address them, including using a creative approach, ability to see different technical opportunities; knowledge of modern technological trends.
6.3. Use a situational approach in various non-standard and rapidly changing conditions, promptly react to changes under working conditions, distribute and redistribute limited resources, including temporary ones.
The international experience of implementing digital technologies has shown that one of the most important management tasks for today's CEOs is bridging the gap in the level of technical literacy among employees. This is in addition to the task of uniting people of different generations into a single team, which will be able to engage in high-tech production.

CEOs agree with scientists and experts analysing the global experience of digitalization implementation that the future is in its hands. And the digital skills of employees are becoming an important condition for the success and competitiveness of the company. However, the majority of executives are pessimistic, as employees in their companies do not yet have the digital skills they need. In today's environment, these skills are mostly held by individual specialists, but international experience in implementing digital technologies has shown that most of the company's employees already need to develop these skills.

To be more effective in developing digital flexibility among their employees, the company's management should first of all begin to change themselves by developing their digital skills. In the corporate culture of the company, the key values should be ability to learn and flexibility, to develop their readiness, as well as to encourage them to change constantly.

It is important for HR department managers and employees to help identify gaps in their digital competence, to help them understand what digital competencies they need to develop, how new knowledge and skills will help them to grow professionally and shape their career goals. Ability to support employees in developing their digital competencies, including the integration of knowledge into the work environment. It is also important for managers to increase the motivation of employees to use the digital skills acquired. Such support will help employees to find opportunities for self-development in the digital environment, and will contribute to the promotion of lifelong learning, reflecting the value and importance of learning for today's employees. And it is highly likely that they will increase their confidence of their own ability to learn the digital skills they need.

4. Conclusion

In article the resource approach to strategy of development of the enterprise in which one of the major components are human resources is considered. The outcome of the research at the industrial enterprises of St.-Petersburg revealed some problems of insufficient attention from management to social resources of the enterprises have been revealed, including negative emotional reaction of workers when their opinion is ignored during decision-making by management. The approach to human resources management as a complex integrated system consisting of interrelated and interacting subsystems, such as the formation, use and development of human resources of the enterprise is described. The authors analysed several classifications of digital skills and developed their own grouping of digital competencies consisting of six components: information literacy, creation of digital content for communication and cooperation, security in the digital environment, computer literacy, non-standard and critical thinking. At the age of digitalization, in order to survive or win the competition, organizations should begin to change dramatically, and one of the important areas for management is to develop the digital skills of employees. The importance of digital skills development for today's employees is justified, as the latter become an important element for the success and competitiveness of the company at the age of digitalization.

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