

Specifics of Organizing and Standardizing Innovative Labour in Information Economy

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Abstract—Existing methods of standardizing innovative labour were considered. Suggestions for improvements in standardizing management labour were provided. The core and content of the work by innovative activities were defined. The methods of standardizing were determined depending on innovative labour operations. . (Abstract)

Keywords—innovative labour; brain storm, routine operations; standardizing methods; management personnel, expert method; labour standards (key words)

I. INTRODUCTION

We are living today in a chaotic transition period to a new information age defined by global competition, rampant change, faster flow of information and communication, increasing business complexity, pervasive globalization and increasing creativity and innovation of working operation. The pace of change has become so rapid that it took a different type of companies to be dominant and marked entirely new era of business. As mentioned in her article Hayriye Atik “the advanced world is increasingly being reliant on information and knowledge. The information and knowledge content of goods and services – has – been – increasing because these two factors have upstaged land, labour and capital as the most important inputs of the production” [1, p. 131].

It is generally accepted that some of the main characteristic of information economy are follows. Information overload becomes the norm (for example, Google knows everything you need to know, if you can access it with the right keywords). Value resides in the search engines and their manipulation of the vast amount of data that is available. An extensive, expensive technology infrastructure is required to produce and distribute information, and this needs to be compatible with other purveyors and receivers of information. Deconstruction of the company's vertically integrated systems in the knowledge area then takes place. Deregulation of knowledge then happens as new competitors with new knowledge make cross-competition possible. Repartition of knowledge finally takes place as more localized knowledge becomes important for reassertion of competitive advantage. Local brokers and selling agents emerge.

So we could made conclusion that information as well as innovations become one of the main competitive advantages at the present time. That is we need to pay attention on minimizing companies expenses connected with innovation invented and implementation.

The experience of entity operations in developed countries shows the growing role of management personnel labour standardization. The selection of an adequate labour standardization method contributes to workflow rationalization. Since the content of innovative labour significantly differs from other labour activities, improving labour standards for this category of employees in an active operating entity are quite topical.

Considering the growing role of innovative operations in nearly all types of labour processes, it is currently especially urgent to substantiate universal methods for standardizing innovative labour in business.

In the existing economic conditions many researchers are studying the problem of improving the standards of innovative labour.

Considerable contribution in the development of theoretical aspects of organizing and standardizing innovative labour has been made by such domestic scientists as Sisun G.G., Joshy O.I., Gorbatiuk K.V., Bahrova I.V., Melnikova I.E., Yadranskyi D.N., Dziuba S.G., Gaidai I.Yu., Yeriomenko V.A., Kovalenko G.A., Ryzhykov V.S., Balabanova L.M., Sardak O.V. etc. Among the foreign researchers the following economists should be mentioned: Bekleshov V.K., Zavlin P.N., Yakovlev Yu.V., Derkach G.M., Rubanov A.Yu, Levchenko S.M., Buckley J.J., Mohseni M. However, these papers have not sufficiently studied standardization methods applicable to innovative labour.

Therefore, the aim of the research is to substantiate methodological approach to labour standardization differentiated by activities.

To reach the aim the following tasks were solved: innovative labour standardization methods were summarized; standardization methods were defined depending on innovative labour operations; innovative labour activities were determined, as well as the list of labour operations.

II. MAIN RESULTS

Based on the analysis of the economic literature on the specifics of management personnel labour standardization, the existing methods of innovative labour standardization were analyzed and summarized. This provided an opportunity to formulate the following conceptual points of the guidelines offered.

Firstly, nearly all innovative labour operations require standardization.

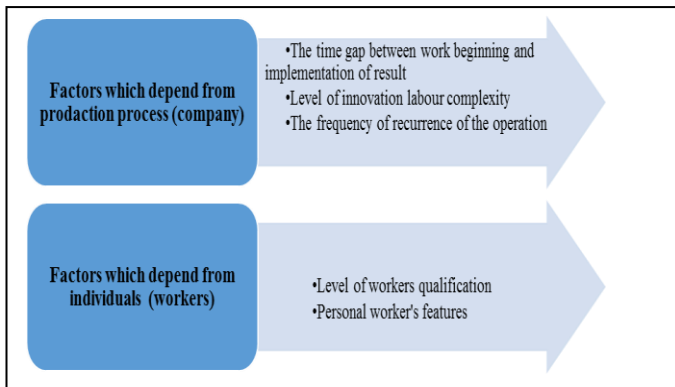
Based on the analysis of the works foreign and domestic scientist, such as Gorbatyuk K.V., Sisun G.G., Joshi A.I., Bekleshov V.K., Zavlin P.N., Shcherbakov A.I., Yudelevicha M.A., [2 - 5] we make conclusion that common approach to measuring and evaluating innovative labour does not exist.

The main difficulties in solving this problem are follows:

- 1) to overcome the complexity and ambiguity in the definition of the final result of the work;
- 2) to coordinate of the different stakeholders' views for the determination of the contribution of each side to the innovative work final result;
- 3) to take into account the specific characteristics of the administrative staff work in innovation production;
- 4) to determine the optimal ratio of employment specialists due to their uneven loading;
- 5) the existence of a large time gap between the initial and final stage of the implementation of innovations and hence the uncertainty of the final result of work at the moment of salary payment;
- 6) the need for the simultaneous regulation of labour in the structural division and the company as a whole, thus need to have the same methodological approaches to rationing;
- 7) the presence of the deep specifics of the innovation work, which in recent years even more deepened.

Some researchers identify factors that affect the cost of labour [6]. Based on the analysis of works [4, 6, 7 - 8] were summarized the factors affecting the cost of innovative labour. Classification of main factors presented affected innovation labour costs presented at figure 1.

Fig. 1. Classification of the factors that affect the value of innovative labour costs.



Secondly, application of specific innovative labour standardization methods is determined by the extent of operation novelty.

The analysis of the literature devoted to the question of the rationing of labour indicates a variety of existing methods of innovative work's rationing. Currently, the most common methods of rationing of creative work (as well as part of it – innovative) are the following:

- 1) direct methods. Direct methods are established through

a "pre-established standards and norms of the time" [9], or by observing the time-consuming operations of worker and the subsequent processing of the results. At the same time as mentioned Melnikova I.E., classification of worker's working time is identical to the classification of manager's working time.

Work standardization on the base of standards and norms of the time is used for the rationing of many engineering, technological and design works through the use of the enlarged time norms. We can make conclusion that the rationing of employees' and managers' work, according to Sisun G.G. and Joshi A.I. research has a lot common approaches;

2) indirect methods. Indirect methods provides for the definition of working time by determining the number of workers (the number of ready-made standards, service standards, the calculation of the number of subordinates by the methods of mathematical statistics). In addition, for each type of innovative work labour standards should be developed in their numbers. For example, Sisun G.G. Joshi A.I. also offer a number of regulations to develop, not only for each function and for each type of work, but according to his position. According to these authors, in cases when it is necessary "to allocate the number of divisions between the calculated and the relationship between individual categories of employees (managers and executives, engineers and technicians) regulations apply centralization, number of subordinates, service and value for the number" [3].

Expert rationing method is most relevant to the essence of innovative work, which have a high level of originality and uniqueness. The disadvantages of this method is the difficulty in determining the source data for the calculation of the complexity of work, as well as subjective evaluation of experts. The method is based on the expert use of expert estimates.

Bekleshov V.C., Zavlin P.N. in [4] offer to use the summary method of rationing on individual transactions for which it is difficult to determine the complexity.

Summary rationing methods as the basis use as a basis analogue. According Eremenko V.A., Kovalenko G.A., Rizhikov B.S. this method has a limited usage because of inability to use all workers potential efficiency.

Summary methods are classified as follows: research, statistics, comparative.

Bekleshov V.C., Zavlin P.N. emphasize that in this summary method the total reporting and statistics on labour costs in the past (analogy system) and special correction factors are used. According to these authors [4] the summary method can be called experimental statistics, because not all of the work keeps records of actual costs," so you need to use a unique system.

It should also be noted that in recent years appeared new approach reflected in works of Eremenko V.A., Kovalenko G.A., Rizhikov V.S. and devoted to mathematical-statistical method of innovative labour rationing.

Such scientists as Sisun G.G., Joshi A.I. in addition to the

research and statistical experts' methods also distinguish the comparative method. With this method, as noted by these authors in [3], it is necessary to calculate correction factors to clarify the rules.

Analytical research methods of rationing tend to apply for jobs that are specific conditions of their implementation in different business units. In the absence of standards and recommended this method of rationing. Sisun G.G. and Joshi A.I. among the advantages of this method include the ability to take into account the specific characteristics of the work or operations. The disadvantages of this method are the dependence of the observations on the pace of work in the specific department. Analytical and computational methods are used very rarely because of the difficulty in determining the primary statistical data. The disadvantages of this method include high computational complexity, and the difficulty of establishing the impact of each factor on the complexity at multiple correlation [4].

Methods for rationing can be used for different operations separately and simultaneously. The application of a rationing method depends on several factors: the level of work's novelty; the nature of the operations [4]; the possibility of rationing implementation at the enterprise.

Melnikova I.E. [9] offers to standardize management personnel labour by two methods: direct («by quantity, time consumption) and indirect (by number). In the author's opinion, more accurate estimation of executives' labour consumption provides the direct method of standardization. This viewpoint has been shared by Yadranskyi D.N. [10]. Many authors (e.g., Sisun G.G., Joshy O.I., Bazadze N.G., Titova T.L., Gavrilova N.A. [3, 11]) divide innovative labour standardization methods into analytical calculation and analytical research. Analytical calculation method by Sisun G.G., Joshy O.I. is identical to the direct method by Melnikova I.E. Sisun G.G., Joshy O.I. also advise on standardizing labour of civil servants: firstly, standardizing labour of civil servants shall be carried out based on number standards; secondly, time standards are calculated first by individual, repeated operations, and then labour consumption of all the work is estimated. The research by Gorbatiuk K.V., Balabanova L.V., Sardak A.V. [2, 8] offers to apply the microelement standardizing system (MTM, MODAPTS, MSD, Work Factor, BSM in different versions) to set rules and standards in innovative labour. Dziuba S.G., Gaidai I.Yu. [8] also consider applying the microelement standardizing method. However, they single out only MTM system as one of the most popular ones. To their mind this method is the most justified and accurate. It should be noticed as well that besides this method the above authors do not deny the use of other standardization techniques. For instance, Balabanova L.V., Sardak A.V. also consider analytical, statistical and expert standardization methods. Gorbatiuk K.V. suggests using observation methods (motion time measurement, work time studies). This opinion is shared by Slizenger G.E, Sokolova V.V. [12]. It is to be noted that some authors call observation methods as analytical research.

Another point of view was expressed by Dziuba S.G., Gaidai I.Yu. they offer to use dedicated labour standardization

software called "Work measurement programmes". These programmes are currently in place only in foreign companies, but are already self-sufficient. In [12] Vitvitskyi V.V., Nikolaenko V.M., Glon V.M. study consolidation of time standards using expert assessment and questionnaires.

According to Derkach G.M., Rubanov A.Yu., Levchenko S.M., Sokolova V.V., Glinianyi V.G., Yermakov L.A., Khimchenko G.T., the main methods of innovative labour standardization are analytical [6, 12]. Therewith, Sokolova V.V., Glinianyi V.G., Yermakov L.A., and Khimchenko G.T. point out an analytical experimental method, whereas Derkach G.M., Rubanov A.Yu., Levchenko S.M. – standard analytical (experimental-statistical), based on the "multilayer classification of scientific research and computer processing" [6, 12]. Yeriomenko V.A., Kovalenko G.A., Ryzhykov V.S. recommended to apply mathematical statistical method to standardize management personnel labour [6].

The results of the rationing methods application for innovative works was done after analysis scientist work [3, 4, 6,12-14] than summarized and presented in Table 1.

TABLE 1. METHODS OF INNOVATION LABOUR RATIONING CLASSIFICATION

Methods of innovation labour rationing		
Expert methods		
Summary methods	Research methods	
	Comparative methods	
	Statistical methods	Research-statistical Mathematical statistical
Analytical methods	Analytical and research	Photo of working time
		Self-photo of working time
		Chronometry
		Photo timing
	Analytical and calculation	According with the calculation According to the norms

Thirdly, innovative working activities are divided into three kinds: brain storm, less creative and routine.

Major creative activities (e.g. brain storm) imply high level of novelty. They include: fundamental, search and applied research work, design and development (inventions and discoveries), forecasting, planning and heuristic tasks.

Less creative work is individualized, do not require high level of novelty and are related to frequently repeated operations. These include: design work, applied research and development and design and development with no considerable novelty, development, documenting, publishing text information, as well as operations, performed by ordinary design engineers, process engineers, planning engineers of research, development and design departments.

Routine work comprises frequently repeated operations, similar, with little creative input, not requiring novelty, reproduced according to the specific pattern. These activities include studying and preparing production to the manufacture of new products; innovation commercialization; development of drawings; accounting operations; graphic, estimation and

office work; drawing up quarterly, annual reports; preparation to conferences.

Fourthly, each type of work is characterized by its standardization methods. The results of analysis of the applied standardization methods depending on innovative working operations based on the research of contemporary scientists [5, 11, 12, 15 - 17] are given in Table 2.

TABLE 2. STANDARDIZATION METHODS DEPENDING ON INNOVATIVE WORKING OPERATIONS

№	Work type	Standardization methods
1	Brain storm	1. expert method (most often) 2. analytical research
2	Less creative	1. summary methods (most often) 2. information method 3. experimental statistical method
3	Routine	1. number standard 2. experimental statistical 3. analytical calculation 4. analytical research (observations) 5. analytical experimental 6. modern mathematical methods

In the brain storm the most widespread method is expert. Summarizing the works by Bahrova I.V., Golovachev A.S. and others [15, 17] this method is used for the following activities: 1) for scientific research applied work and experimental design development, fundamental research activities with high level of novelty; 2) for heuristic objectives, forecasting and prospect planning tasks. Brain storming for research and development and design and development activities sometimes also involves analytical research standardization method.

For less creative activities the summary method is applied most frequently: for applied research and development and design and development with no high level of novelty; for documenting and publishing text information. For less creative work (research and development) Bekleshov V.K. and Zavlin P.N. suggest using another standardization method – experimental statistical. Less creative activities also imply using the information method for design work.

Routine operations are characterized by the use of calculation analytical standardization method. Normally, it is applied in drawings development and experimental designing. Accounting and graphical activities should be calculated by number standards. For very short operations, as well as for the operations, featuring specific organization and engineering conditions (routine work) observation (analytical research) methods are used. It should also be noted that routine operations are also characterized by other standardization methods (e.g., reporting, research and technical work, preparation for conferences – analytical and experimental method; for frequently repeated operations – modern mathematical methods).

III. CONCLUSIONS

By the results of the conducted research the methodological approach was developed for standardizing

innovative labour rationing based on differentiated by activities and essence of innovations labour and features of modern methods of rationing. Proposed methodology based on modern management concept appeared last years and adequate for information economy characteristics. This approach comprises the following aspects: the use of specific innovative labour standardization methods is determined by the level of novelty of the operation; the core and content of innovative working activities were divided into three groups: brain storm, less creative, and routine activities; specific standardization methods were substantiated for each type of activities. Thus, the suggested methodological conceptual approach to standardizing innovative labour rationing is fundamentally different from the existing differentiations by working activities. Further research may be conducted in the area of substantiating of the use of labour intensity methods depending on the innovative activity and grounding method for each type of innovation activity at the enterprise.

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