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Basic principles application of the ABC methodology in human resource management at the enterprise

Abstract:
The main problem of modern human resource management is the automation and optimization of the work of the administrative and managerial division employees and workers, whose professional activities are within the framework of project activities but not controlled by the conveyor process. The relevance of this topic arose in the last quarter of the 20th century and is increasingly increasing at present. Automation involves the use of equipment, software and methodologies, which allow automating business processes, reducing "manual labour", and minimizing the risks of the human factor. Business processes optimization involves the search for efficiency in methodological transformations of working conditions, i.e., simplification and acceleration of processes while maintaining the quality level. The study purpose is to develop the ABC methodology, which involves the use of triplicity in positioning the calculation of indicators of various system parameters. In the study course, analytical, logical, comparative research methods and modelling methods were used. Materials and works of leading and modern researchers in the field of labour management and automation were used to implement the study. The author concludes that the ABC methodology has several objective advantages both in its model and the mathematical component, which makes it possible to borrow and adapt the methodology for any enterprise where business processes can be applied.

Keywords:
business process, management methodology, enterprise management, labour optimization.

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Основные принципы применение методологии ABC в управлении человеческими ресурсами на предприятии

Аннотация:
Основной проблемой современного управления человеческими ресурсами является автоматизация и оптимизация работы сотрудников административно-управленческого подразделения и рабочих, профессиональная деятельность которых находится в рамках проектной деятельности, но не управляется конвейерным процессом. Актуальность данной темы возникла ещё в последней четверти XX века и всё более повышается в настоящий период времени. Автоматизация предполагает собой использование оборудования, программного обеспечения и методологии, которые позволяют автоматизировать бизнес-процессы и сократить «ручной труд», а также минимизировать риски человеческого фактора. Оптимизация бизнес-процессов предполагает поиск эффективности в методологических преобразованиях условий труда, то есть упрощение и ускорение процессов при сохранении уровня качества. Целью исследование является разработка методологии ABC, которая предполагает использование тройственности в позиционировании расчёта показателей различных параметров системы. В ходе исследования применялись аналитических, логический, сравнительный методы исследования, а также методы моделирования. Для реализации исследования были использованы материалы и труды ведущих и современных исследователей в области управления и автоматизации труда. Автор делает заключение, что методология ABC имеет ряд объективных преимуществ как в своей модели, так и в математической составляющей, что даёт возможность заимствовать и адаптировать методологию под любое предприятие, на котором могут быть применены бизнес-процессы.

Ключевые слова:
бизнес-процесс, методология управления, менеджмент предприятия, оптимизация труда.

Introduction

The main problem of modern human resource management is the automation and optimization of work of the administrative and managerial division employees and workers, whose professional activities are within the framework of project activities but not controlled by the conveyor process. The relevance of this topic arose in the last quarter of the 20th century and is increasingly increasing at present.

Automation involves the use of equipment, software and methodologies that allow automating business processes, reducing "manual labour", and minimizing the risks of the human factor. In the era of "digitalization", automation is an important strategic direction for the business, as it allows to reduce the probability of errors possible due to the human factor, solve the problem of duplication of business processes and, of course, reduce costs. At the same time, the question arises about the consequences of automation for employees who previously performed routine business processes. According to a Brookings study, about 25% of jobs in the United States are at high risk, as more than 70% of employee responsibilities in this segment can be optimized.

Optimization of business processes involves the search for efficiency in methodological transformations of working conditions, i.e., processes simplification and acceleration while maintaining the quality level. This task is extremely difficult because it follows the automation of business processes and assumes a new qualitative stage of transformation or evolution of a complex of business processes.

The study purpose is to develop the ABC methodology, which involves the use of triplicity in positioning the calculation of various system parameters' indicators.

Based on the study purpose, the following adjectives were set:

- analyze the current state of conditions for automation and optimization of business processes at enterprises;
- describe the basic principles of the ABC methodology applicable for automation and optimization of physical and intellectual labour in the enterprise;
- present a general model for the application of the ABC methodology.

Analytical, logical, comparative research methods, and modelling methods were used in the study course.

Materials and works of leading and modern researchers in the field of labour management and automation were used to implement the study.

1. The current state of conditions for automation and optimization of business processes at enterprises

When assessing the consequences of automation for personnel, it is necessary, first of all, to divide companies into SaaS (software as a service) and real sector companies, which may have a production cycle, delivery and warehousing, retail and wholesale outlets. For SaaS companies, automation is mainly a "relief" for employees, and for real sector companies, it is more a threat to employment. The

reason is in the fact that the production of material goods is more of a "conveyor work", while digital companies are focused on creativity.

If a SaaS company decides to optimize several business processes, then this means freeing up time for employees to fulfil strategic business objectives. For example, if earlier the marketing department had to "manually" send emails to customers or spend time on programming, now companies can use CRM. Another example, if earlier, to control the quality and level of customer satisfaction with the company's business platform, it was necessary to appoint individual responsible people and make complex calculations in excel, now it is enough to use an information panel to visualize all performance indicators. It is noteworthy that in digital companies, employees will continue to perform their current duties, automation will free up time for more priority things and reducing routine will allow creatively looking at other tasks.

For companies in the real sector, automation can even mean the end of professional activity for employees. For example, the RFID tags' introduction in warehouses, optimization of the inventory process by scanning tags and automation of accounting for goods during acceptance and shipment can reduce the working staff by at least 2 times. Also, a dairy farm can be used as an example: a business can use machines to automate the process of feeding cows and reduce the physical force used. In both cases, it will be difficult for the business to retrain employees to perform other tasks and, most likely, the working staff will fall under the reduction.

Automation of business processes is mainly related to training the machine to perform template tasks. Even if artificial intelligence technologies are used, machines cannot fully take over the "unique" work associated with performing creative and often unstructured tasks. For example, today machines cannot develop company strategies or calculate business plans since these tasks have a wide range of nuances that only a person can figure out. Also, machines cannot carry out repertoire planning for cinemas. It requires flair, knowledge of the market, audience and extensive experience.

It may seem that "mental" activity is outside the risk zone of automation, unlike working with "hands", but this is not entirely true. A striking example is that companies use robotics technologies to train machines to do paperwork: fill out legal documents, perform calculations. These initiatives allow companies to reduce staff in legal and financial departments. In contrast, the work of the craftsmen who sew pointe shoes in the Bolshoi Theater as a unique product that has no analogues, cannot be automated.

Thus, if the labour format involves work, not associated with the exact embodiment of small unique details in life, then this activity is an ideal candidate for automation. If employees perform work, which is a kind of art, something that cannot be brought under a template, then automation can only be used to reduce routine work.

It is impossible to unambiguously assess the danger of automation for personnel from the point of their employment view. It is necessary to consider the uniqueness of the duties performed and what prevails in the company: creativity or conveyor production. Automation can be both a chance for staff to work more productively by reducing routine, and vice versa, a verdict on dismissal.

However, this does not mean that due to automation, unemployment rates will increase significantly in the future. If a company strives to optimize costs, then layoffs are inevitable. If we are talking about a digital company that is striving to reach a new qualitative level, then automation, even if the duties of the working staff are not unique, may not entail layoffs, but lead to workforce redistribution.

Since many companies are in the digitalization process, automation of several business processes takes place on an ongoing basis. Going digital and building a digital ecosystem is not seen as an improvement in quantitative short-term indicators, it is a long-term qualitative project. The dismissal of staff is not a consequence of digitalization. Leading companies are using such practices less and less.

After the introduction of automated business processes for companies, there comes a period of searching for an effective redistribution of labour and, thereby, developing ways to improve the efficiency of work processes, including motivational components.

2. The basic principles of the ABC methodology applicable for automation and optimization of physical and intellectual labor in the enterprise

The ABC methodology is based on the triplicity of such parameters of human resource management at the enterprise as business processes and the qualifications of an employee or worker. It is assumed that to facilitate the perception of the labour optimization system, it is sufficient to categorize three levels of complexity since a larger number of parameters will significantly complicate the system and will not contribute to a high degree of accessibility of the methodology for middle managers.

The business processes set can be represented in the form of three sets divided according to the principle of the complexity of their execution without accounting for the parameter of the execution time duration. The complexity degree is determined in a comparative form concerning each enterprise department or division

separately since the complexity of business processes is determined by the features of the functional unit.

Business processes are grouped according to the degree of complexity:

A – complex execution of business processes,

B – average complexity of business processes,

C – business processes that are light in complexity.

Because the number of complex business processes should be less than light ones, and medium-complexity business processes should dominate the total number of the processes, implemented in the enterprise department, a proportion was practically developed (Table 1).

Table 1. Proportional distribution of business processes by their complexity of execution

	A	B	C
Optimal	15%	50%	35%
Mini optimal	10%	50%	40%
Maxi optimal	20%	50%	30%

Table 1 shows the percentages of the three levels of complexity of business processes, based on their median proportion and the two extreme indicators of the system, i.e., minimin and maximax relative to business processes of category A.

The principle of triplicity is also used to categorize the level of competence of office or working personnel concerning basic qualification requirements:

A – higher qualification,

B – average qualification,

C – low qualification.

Based on experimental data, median indicators of the difference in the time of execution of business processes of each category by specialists of each skill level were obtained while maintaining an equal quality indicator (Table 2).

Table 2. Median coefficients of the business process' execution time ratio

		Stuff qualification		
		A	B	C
Business processes	A	K_1	$K_{1,3}$	$K_{1,6}$
	B	$K_{0,7}$	K_1	$K_{1,3}$
	C	$K_{0,5}$	$K_{0,7}$	K_1

The verification of the coefficients of the time parameters of business processes execution is carried out according to the principle of compliance, i.e., the execution time of each business process of level (A) is checked on the performance of A-qualification employees from 3 to 5 times to calculate the true median of the duration of execution. In the same way, the execution time of each business process of level (B) is checked on the B-qualification employees from 3 to 5 times. The execution time of each business process of level (C) is checked on the C-qualification employees.

Based on these indicators, a matrix of effective business processes' distribution at various levels of complexity among employees of three competence levels was formed (Table 3).

Table 3. Distribution matrix of business processes volumes by categories of employees of three competence levels

		Stuff qualification		
		A	B	C
Business processes	A	75%	25%	–
	B	25%	50%	25%
	C	–	25%	75%

The following conditions (rules) were defined when compiling the matrix:

1. Specialists of neighbouring competence levels should be able to improve their level to get their higher skills and create an effect of interchangeability.
2. Specialists of the highest category (A) should not perform business processes of the lowest complexity level (C) because their time costs disproportionately more and leads to maximizing the cost of the payroll. This condition can be violated only in the absence of specialists of the categories (B) and (C).
3. Specialists of the lowest category (C) should not perform business processes of the highest complexity level (A) because the risk of reducing the quality level of the result of the business process is maximized. This condition can be violated only in the absence of specialists of the categories (A) and (B).

Thus, the basic principles of the ABC methodology correspond to the basic requirements of labour optimization after the stage of automation or regulation of business processes of a separate division of the enterprise.

3. General model of ABC methodology application

The ABC methodology application model assumes that clear planning of its implementation process will be carried out.

1. Compilation of the register of business processes of the enterprise department.
2. Differentiation of business processes into three comparative categories by levels of complexity of execution: 15% (A), 50% (B), 35% (C) or within the limits of "minimin-maximax".
3. Differentiation of personnel by three categories of competence.
4. Testing the implementation of business processes by personnel of the appropriate level of competence.
5. Testing the implementation of business processes by related categories of specialists for the verification of time coefficients.
6. Test formulation of business processes according to the matrix of distribution of volumes of business processes by categories of employees of three levels of competence.
7. Regulation of business process planning within one department of the enterprise.

Thus, the ABC methodology can improve the efficiency of the implementation of business processes in an enterprise while observing the model of its application. The sequence of methodology implementation is a prerequisite to realizing the main goal – combining the principles of automation and optimization in a single complex.

Discussion

When developing the ABC methodology, the study identified a list of problematic issues that require further research:

1. Standardization of methods for measuring the business processes duration.
2. Standardization of the principles of primary correspondence of professional competence categories with categories within the ABC methodology.
3. Determination of the level of personnel adaptation to the methodology, at which verification can be completed and replaced by the implementation stage.

Conclusion

The ABC methodology is being developed and designed to implement a high level of automation and optimization of the enterprise employees work in the areas that can be included in processing with the identification of time, volume of labour and its quality. The methodology is an attempt to minimize the complex processes of searching and determining KPIs parameters, which should standardize the work

of personnel and as much as possible reduce the dependence of the enterprise on personnel instability.

This methodology has several objective advantages both in its model and in the mathematical component. It makes it possible to borrow and adapt the methodology for any enterprise where business processes can be applied.

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