

Improving labor productivity through the rational use of working time on the basis of time management technologies

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Abstract: *Rational use of working time leads to increased labor productivity. Time management technologies serve to increase the efficiency of time management in modern enterprises.*

Keywords: *working time, time management, time balance, labor productivity, management.*

Introduction

Properly planned time in all periods of human development and in all areas of activity has provided an opportunity to achieve much higher results. The importance of efficient use of time in the context of market relations is growing. This is primarily due to the fact that in a highly competitive environment, labor productivity is of great importance, which is associated with profit or loss to the enterprise. Saving working time and its rational use is an integral condition of effective operation. Economists point out that there is an inextricable link between labor productivity and the efficient use of working time. Therefore, the more actively the time management technologies are used in railway transport enterprises, the less labor costs the employees of the enterprise can perform a larger amount of work. Rational management of time and the organization of labor based on it cannot exist separately from real labor activity. A well-organized labor process provides not only economic but also significant social benefits in the integral connection with technical and technological factors and production management [1].

Main part

How fast human development progresses is determined by the speed of information transmission. The flow of information of any size, density, and complexity necessarily includes the time parameter. Time is the most important parameter that ensures the quality and timeliness of information. There is no doubt about the necessity and urgency of effective time management in such circumstances. The development of labor relations and the improvement of technical equipment in railway transport will lead to an increase in the cost per unit of working time, and its savings will be achieved through the use of time management technologies.

Time management is an effective technology for organizing work and personal time. For anyone who seeks personal and professional success, a non-renewable resource, that is, a waste of time is an unforgivable mistake, time management technology can be considered as their vital concept [2].

The idea of a scientific approach to the use of time and, on this basis, to increase the efficiency of the labor process belongs to Frederick Taylor. Taylor linked time management directly to goal setting, achievement, and motivation. Once he theoretically substantiated time management, he was able to apply it in practice and increase labor productivity.

The term "time management" began to be widely used only in the early 80s of the twentieth century. At the beginning of the XXI century, there was a great interest in the use of time management technologies to increase the efficiency of production processes.

According to the principles of time management, time loves accounting, it is necessary to know how much time is spent. In order to better study the time spent in railway transport enterprises, direct observations of working hours, such as work day photography, timekeeping or photouchet, are carried out.

1. Working day photography is a type of observation in which all the actions of an employee during the working day are studied. The observer records the employee's time spent on the TNU-1 form observation sheet. From 1 to 3 people are taken as the object of observation. The observer arrives 10-15 minutes before the start of work and takes his watch or stopwatch as the clock in the shop. Every post needs to be clear and meaningful. When work begins, the observer immediately begins to observe the time spent on the object. If the worker is late at the beginning of the work, the reason is indicated. For example, the words "smoked" or "talked about their work" are entered in the column of the observation sheet entitled What the worker does. Lunch time is not included in the observation time. Tracking data is entered in the form of a protocol, i.e. what the employee did is recorded, the end time of each action, its duration and to which time index it belongs. The observer should not come into contact with the worker during the observation. Upon completion of the follow-up, the TNU-2 observation sheet will determine the average values for all time indices, and then proceed to make recommendations on the amount of time losses, their causes, and how to eliminate them.

Once the time loss analysis is performed, real and normal (rational) time balances are developed. The real-time balance sheet shows the working time expenditures identified during the monitoring process, as well as the length of the entire working day and the percentage of time indices relative to operational work. In the normal time balance, the established normative values of time indices and their length for the whole working day and their share in relation to operational work are given [4]. As an example, the results of the actual and normal (rational) time balances of plumbers engaged in the repair of wagons in an individual photo taken at the Tashkent wagon depot are given in Tables 1 and 2.

Table 1

Real-time balance of working time

Working time consumption		Actual time balance of the working day, minutes		
name	index	Duration, minutes	Working day a percentage of length	Percentage of operational time
		Preparatory-final	ПЗ	16.0
Operative	ОП	369.6	77.0	----
Workplace service	ОБ	25.3	5.3	6.8

Total productive working time	P3	411.0	85.6	---
Random jobs	CP	16.7	3.5	4.5
Excessively unproductive work	HP	14.0	2.9	3.8
Total unproductive working time	H3	30.7	6.4	8.3
Technological breaks	ПТ	0.7	0.2	0.2
Rest and physiological needs	Потл	14.0	2.7	3.8
Breaks caused by poor organization of production	ПНТ	0.3	0.1	0.1
Breaks due to violation of labor discipline	ПНД	23.3	5.0	6.0
Total breaks	П	38.3	8	10.1
Total working time	T	480	100	----

Based on the data of real and normal time balances, the coefficient of possibility to increase labor productivity is determined:

$$K = 1 + T_{ort} / (T_{sm} - T_{ort})$$

Here, T_{ort} is the duration of time losses that can be eliminated, minutes (T_{ort} in the enterprise in question = 66.5 minutes)

T_{sm} — duration of working day, minutes (480 minutes).

Table 2

Normal time balance of working time

Working time consumption		Actual time balance of the working day, minutes		
name	index	Duration, minutes	Working day a percentage of length	Percentage of operational time
Preparatory-final	ПЗ	16.8	3.5	3.8
Operative	ОП	435.4	90.7	----
Workplace service	ОБ	14.9	3.1	3.4
Total productive working time	P3	467.1	97.3	---
Random jobs	CP	---	---	---
Excessively unproductive work	HP	---	---	---
Total unproductive	H3	---	---	---

working time				
Technological breaks	ПТ			
Rest and physiological needs	Потл	12.9	2.7	2.9
Breaks caused by poor organization of production	ПНТ	---	---	---
Breaks due to violation of labor discipline	ПНД	---	---	---
Total breaks	П	---	---	---
Total working time	Т	480	100	----

Based on the data in the above tables, we determine the coefficient of opportunity to increase labor productivity:

$$K = 1 + 66.5 / (480 - 66.5) = 1.16, \text{ i.e. } 16\%$$

This means that there is an opportunity to increase the productivity of workers in the wagon depot by an average of 16% in exchange for the elimination of wasted time.

But in railway enterprises such an approach is based on the principles of traditional labor organization and standardization. In modern conditions, foreign experts in time management believe that the study and management of working time simply by the difference between real and normal time balances is not effective enough. They stressed the need to use several technologies of time management in the distribution of working time in enterprises.

According to the principle of time management, it is necessary to create working conditions that do not distract workers so that they can perform their duties fully. However, in this case, the time spent by the worker and the manager on vacation should also be planned. One of the most popular methods of time management in foreign companies is the tomato method. This management technology serves to prevent fatigue, stay alert, and focus all your attention. The Tomato method helps productive employees manage time without being distracted. According to him, you should not be distracted by another job for 25 minutes, but only one job. A timer (clock) is used for best results. Then rest for 5 minutes and start working again. That way, after four 25-minute jobs, you'll be given a 15-minute break. This 25-minute time is related to a person's psychophysiological characteristics, as the human brain can receive and process information for no more than 30 minutes, after which the brain begins to get tired and errors in receiving information occur. The "Tomato" method involves 5 steps:

1. Planning. At this stage, a list of things you want to do during the day is created.
2. Observation. During the day, you collect information on how much time you spent on "tomatoes", how much was left or not
3. Writing. You write down all the information you receive without storing it in your brain.
4. Processing and presentation. You process the data obtained, analyze it and draw conclusions. You will develop plans to increase your efficiency [3].

In conclusion, it is important to know how to say no to effective time management. In many cases, this is an effective tool for saving time, because trying to say "yes" or "yes" to everyone, trying to look good to everyone, ultimately deprives the employee (manager) of energy and time resources to do very important work. Even distracting an employee for "a second" or "a minute" can result in a production

task not being performed.

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