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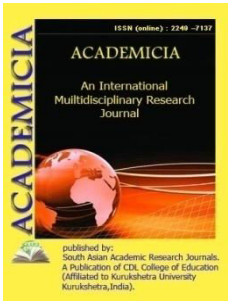

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PSYCHOLOGICAL FACTORS OF INCREASING LABOUR PRODUCTIVITY

Nazarova Marguba Gulamovna*; Usmonaliyeva Iroda Ablakhat qizi**

*Senior Lecturer,
Department of Social Sciences and Humanities,
Almalyk branch of Tashkent State Technical University,
Almalyk, UZBEKISTAN

** 2nd-year Student,
Almalyk branch of Tashkent State Technical University,
Almalyk, UZBEKISTAN

ABSTRACT

The construction industry is a work environment that poses many dangers to workers, with many hidden factors that affect work awareness. Construction companies need to ensure a balance between productivity and safety in the work environment. The purpose of this study was to identify relationships between the feeling of safety in the work environment, proactive work behaviour, job satisfaction, work skills, team performance, and health risk indicators, such as heart rate, among construction workers of different ages. Based on previous research, we examined the hypothetical perception model.

KEYWORDS: *Construction Worker; Age; Heart Rate; Body Mass Index (BMI); Structural Equation Modelling.*

INTRODUCTION

Productivity is an indicator of the economic efficiency of employees. The concept of labour efficiency is broader than the concept of productivity, which includes not only economic aspects (actually labour productivity), but also psychophysiological and social aspects. If the following requirements are not met, the growth rate of labour productivity will inevitably decrease unfavourable sanitary-hygienic and harmful working conditions for human health; waste of working time due to illness; reduction of the most active period of human labour; additional leave, etc. In a market economy, it is more important to calculate productivity by the volume of

goods sold, because the increase in work in progress and the accumulation of unsold products have no positive economic significance. Many factors affect the level of labour productivity and its dynamics. Factors are the driving forces and causes that affect changes in labour productivity. Some of them contribute to the increase in labour productivity, others may lead to a decrease in productivity: the first group of factors increases labour-power, the organization of labour and production, the improvement of social conditions of workers, the second group adversely affects the organization of production and labour. Deficiencies in development include the negative impact of negative elements in social conditions.

Some enterprise or organization level factors can be divided into internal and external types. Internal factors include the level of technical equipment of the enterprise, the efficiency of the technology used, the level of energy supply of labour and production, the effectiveness of the incentive systems, training and retraining of personnel, improving the staff and the team, as well as everything related to its leaders. External factors include changes in product types and their level of labour due to changes in government orders and market demand, as well as supply, socio-economic changes in society and regions, the degree of cooperation with other enterprises, the maturity of logistics, natural conditions, etc. It is accepted to combine all factors into three main groups according to their internal content and essence: Material and technical factors of increasing labour productivity (including increasing the technical and energy supply of labour based on continuous development of science and technology), organizational factors (their implementation (impact) is related to the fact that the development of science and technology acquisition, provision of the material base of production (equipment, technology) and implementation of various, and in many cases more complex organizational measures do not happen by themselves, but only by participants in social production. occurs only as a result of the active labour activity of the victims). Labour productivity reserves are the opportunity to make fuller use of all the factors of productivity growth, including labour productivity, through the improvement of equipment, technology, production, labour and management organization. Reserves are closely linked to factors that increase labour productivity. There are several classifications of labour productivity reserves, all of which are divided into two major groups: reserves for improving the use of live labour (labour) (organization of labour, working conditions, improving the working capacity of workers, staffing and their placement) [1].

Issues related to the creation of organizational conditions for continuous work, as well as ensuring a high material and moral interest of employees in the results of work) reserves for more efficient use of fixed and revolving funds (fixed assets (machinery, mechanisms, apparatus, etc.) include better use reserves in terms of power and time, as well as more economical and full use of raw materials, supplies, components, fuel, energy and other revolving funds). Reserves are divided into reserve reserves and perishable reserves on the basis of usability. For example, equipment is not fully deployed in terms of capacity and work shifts, and labour reserves that have been studied but have not yet been implemented are reserve reserves. Waste of working time includes the production of unsuitable products, excessive consumption of fuel is included in the reserves of destruction.

The concept of reserves is the waste of time in production (including idle time during shifts and during the day, delays in work and absences from work not planned), the non-production of labour (tools and labour) irrational use of materials, as well as unplanned overuse of labour due

to disruption of established technological processes). Reserves are divided into current and future reserves depending on the period of use. Current reserves will be realized without significant changes in the technological process and without additional capital investment, the reorganization of production of future reserves will require the installation of more sophisticated equipment, capital investment and more time for preparatory work. Reserves are divided into economic, sectoral and domestic production reserves, depending on the location of identification and use. National economic reserves include, first of all, rich natural resources, their comprehensive use, and so on. Network reserves include reserves, the use of which, in general, increases the productivity of employees in the network (specialization of enterprises, concentration and combination of production, improvement of equipment and technology, etc.). Domestic production reserves are important in increasing labour productivity because ultimately, they are all identified and implemented directly in enterprises.

Productivity indicators and ways to increase it. A system of general, specific and auxiliary indicators is used to assess the level of labour productivity. Aggregate indicators include the value of the average annual, average monthly, average daily, and average hourly output produced by a single worker. Specific measures are the time taken to produce a unit of a particular type of product or the time a person spends per day or per person per hour to produce a particular type of product in kind. Auxiliary indicators describe the time spent per unit of a particular type of work or the volume of work performed per unit of time. The aggregate indicator of labour productivity depends not only on the average annual output of one employee but also on the share of their total number of industrial production workers, as well as on the number of days they worked and the length (duration) of the working day. There are several ways to increase productivity:

a) increase production by making full use of the production capacity of the enterprise, because when production increases, only the variable part of the consumption of working time increases, while the constant remains unchanged. As a result, the time spent on product production is reduced;

b) intensification of production, improvement of its quality, the introduction of complex mechanization and automation of production, application of advanced equipment and production technology, organization of production, logistics and other factors in accordance with the plan of organizational and technical measures reduction of labour costs in the production of goods by reducing the waste of time at the expense of improvement. The construction industry is labour intensive compared to other industries, and many construction workers face workloads that exceed their individual physical capabilities. Many construction sites are characterized by poor work environments, such as poor scaffolding, working from heights, high temperatures, and humidity. Long-term physical workloads can lead to chronic fatigue, injuries, illness, and health risks, which may, in turn, reduce on-site productivity. The US Bureau of Labour Statistics reported that over 43,000 workers experienced fatal occupational injuries on construction sites between 2003 and 2010. In addition, studies have shown that 37.9% of US workers experience severe fatigue, leading to fatal consequences related to worker safety, health, and productivity. These strict work conditions are in a similar environment at construction sites around the world. According to a survey by the Ministry of Health, Labour and Welfare, 323 workers died from work-related accidents in the Japanese construction industry in 2017; these accounted for more than 30% of all industry

deaths in Japan [2]. Moreover, the most frequent cause of death was falls/descent (N = 135) that occurred during construction work on buildings and houses. Construction is one of the most dangerous industries, given the high frequency of occupational deaths and accidents. While occupational health and safety is a priority in the industry, it has been pointed out that Japanese construction practices do not comply with sustainability policies.

The construction industry serves as the industrial base in every country and is considered the biggest contributor to national economies. Therefore, it is imperative for the entire construction industry to ensure the expected productivity, in consideration of working conditions and the working environment for workers, and to ensure workers' good health and safety. The primary causes of occupational accidents depend on the nature of the work, workers' behaviour, and on-site dangers in the working environment. Moreover, safety management at construction sites may be difficult to implement on a broad scale. Safety measures in the working environment and workers' awareness of occupational safety are important countermeasures against occupational accidents. Given the relationship between construction workers' age and safety, with older workers shown to be more conscious of safety and to have more professional knowledge and experience compared to young workers, studies have shown that young workers are at a higher risk of accidents than are old workers. Careful concentration on work can reduce unforeseen events. In this study, we conducted a questionnaire survey on safety awareness in construction work among workers from two age groups in a Japanese construction company. The health risks associated with a high resting heart rate among young and older workers have been shown to have a negative effect on workplace productivity and safety awareness in construction work. In particular, regular monitoring of biological information, such as heart rate, and physical information, such as BMI, can help facilitate an enduring work relationship between construction companies and workers by fostering a sense of awareness among older workers. Our study found that health risk indicators, the feeling of safety, job satisfaction, awareness of work skills, and proactive work behaviours in the workplace are suggested to affect workplace productivity. By having a quantitative understanding of workers' health risks and awareness, construction companies can improve workers' Quality of Work (QoW) and well-being. Construction projects involve several daily business problems, and therefore HRM is important in building sustainable development projects. At the construction site, the workforce experiences changes as the project progresses, and the different skills, experiences, and health and safety risks of several workers must be managed. Previous studies on these workers have conducted interviews and questionnaire surveys and created research reports based on HRM, but few have analyzed biological information and physical characteristics. Further research on this can facilitate the management of construction site productivity through teamwork by gaining an awareness of workers. The findings of this study have several limitations. First, the study used a self-reporting method that could result in differences between workers' provided and actual resting heart rate, height, and weight. Future research should seek to include observable data to better understand the potential consequences for workers. Second, the study focused on workers at a Japanese construction company and infers causality in their awareness.

CONCLUSION

Organizational activities at Japanese construction sites are characterized by high levels of worker empowerment, continuous improvement through teamwork, and a positive attitude towards

quality and safety. Including these strong points of the Japanese construction industry, future studies may need to investigate more construction workers, including factors such as organizational culture, job engagement, and job crafting behaviour, to confirm the reported results. Third, worker perceptions are very complex because they are influenced by factors other than age, such as previous experience, physical characteristics, and private situations, which further research should address. Last, the model hypothesis used in this study is diverse, with many side effects and adverse effects, as well as endogenous problems. The suggested results possibly depend on a case study of workers in a Japanese construction company, and the extent of the generality of the results needs further discussion.

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