Factors Affecting on Labor Productivity in Construction Industry in the Case of Republic of Kazakhstan

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The main objective of the paper is to identify weight in percentage of factors affecting on labor productivity in construction industry of the Republic of Kazakhstan. Among the many factors influencing the labor productivity, five factors were selected such as management skills, schedule management, safety management, employee training skills, employee motivation. The study based on survey experience approach. The findings have been presented in five themes related to five main factors affecting labor productivity in construction. The results of analysis allow assuming the appearance of a trend on construction market. It concerned to the arrival of a new generation paying attention to security but at the same time remain open and flexible to new trends.

Keywords: Construction, Construction Industry, Factors, Labor Productivity, Republic of Kazakhstan

1. Introduction

1.1 Background
Construction is one of the country’s largest industries. Construction accounted for 6.5 % of the nation’s GDP in 2015. Thus, there are about 10.8 thousand contractors and construction companies in 2016 and most of them are private. There are only 23 state construction companies. For today, the following are projects required large space of buildings, such as EXPO-2017, Universiade-2017, WILO Factory, etc.

The percentage of employed population in construction industry remained stable in 2005-2015 and accounted for around 2.9% by medium. The number of employees in the industry totaled 229.3 thousand people in 2015 increased by 12% compared with 2010. The average monthly wage in nominal terms increased from KZT 104 434 in 2010 to KZT 148 960 in 2015. (1 USD=331 KZT at 30.01.2017)

2. Methodology

The initial purpose of this study is to identify the main factors affecting on labor productivity in construction projects and respectively to determine the impact of each factor on productivity. A literature review was initiated to collect peer-reviewed English articles from the last two decades regarding key factors affecting on labor productivity in construction. The literature selected originated from peer-reviewed articles from the journals and conference proceedings. Additionally, one of the articles is the result of theses. Literature was chosen based upon its relevance to the following key words: labor productivity and construction. The study was based upon the following five factors: management skills, schedule management, safety management, employee training skills, and employee motivation. A total of 15 surveys were mailed to construction companies listed in the Business ranking (2016) in the Republic of Kazakhstan. The surveys resulted in feedback from 11 companies, approximately a 73% feedback. The survey was conducted among representatives of construction companies. Respondents are asked to allocate a percentage for each factor affecting productivity, with a combined total percentage of 100%. The comparative ranking of respondents by age, sex and position in the construction company is presented below.

<table>
<thead>
<tr>
<th>Table 1 The Comparative Ranking of Respondents by Age, Sex and Position in the Construction Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Female (Years at Birth)</td>
</tr>
<tr>
<td>30-39 years</td>
</tr>
<tr>
<td>40-49 years</td>
</tr>
<tr>
<td>Male (Years at Birth)</td>
</tr>
<tr>
<td>20-29</td>
</tr>
<tr>
<td>30-39</td>
</tr>
<tr>
<td>40-49 years</td>
</tr>
<tr>
<td>more than 50 years</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
3. Results

3.1 Data Analysis
Quality and management skills are given increased attention not only in the construction but also in other industries that is visually displayed in the Figure shown 1. This is especially evident from the assessment of owners who gave almost 50% of the weight to this factor.

![Figure 1](image1.png)  
**Figure 1** Results from Management Skills Factor in Percentage (%) Based on Position and Work Experience of Respondents

Directors note that the requirements for the schedule should be clarified and properly managed. While project managers assessed this factor as not having the most influence because during the project changes can occur and it needs flexibility in this process. (Figure 2)

![Figure 2](image2.png)  
**Figure 2** Results from Schedule Management Factor in Percentage (%) Based on Position and Work Experience of Respondents

Such high values among respondents with relatively little experience of work suggest that a new trend has emerged in the construction industry with the advent of a new generation paying great attention to safety. (Figure 3)

![Figure 3](image3.png)  
**Figure 3** Results from Safety Management Factor in Percentage (%) Based on Position and Work Experience of Respondents

As shown in the following Figure 4, the values show that the owners estimate this factor not as highly as project managers who pay attention to staff turnover, which leads to problems at the project implementation stage.

![Figure 4](image4.png)  
**Figure 4** Results from Employee Training Skills Factor in Percentage (%) Based on Position and Work Experience of Respondents

The following theories such as Maslow’s hierarchy of needs theory, Herzberg motivational theory, Adams’ equity theory, Vroom’s expectancy theory, Reinforcement theory, Alderfer’s ERG theory suggest viewing motivation as one of the key factors affecting performance. We are pleased with the fact that the trends in the construction market in Kazakhstan do not differ from the global trends in assessing motivation. (Figure 5)
4. Inference

4.1 Findings
The main findings of the research that respondents assessed the safety management factor as the most influencing factor on labor productivity in construction which probably differs from the finding of previous researches. In the study of Jason E. Barg (2014) and etc. employee motivation was identified as the most affected factor. In the research of Casey J. Kuykendall (2007) twelve key factors were determined but the factor having the greatest weight was management skills.

Such research can help to complete productivity program enabling better opportunities for management to achieve project costs savings from relatively small investments early on in the project.

4.2 Conclusions
The Construction industry plays a key role for governments in both growing and mature economies. The sector creates new jobs, drives economic growth, and provides solutions to address social, climate and energy challenges. There has been little research regarding key factors affected on labour productivity in Kazakhstani construction projects. Therefore, the research has largely been inductive to highlight the main issues of labour productivity in construction industry in Kazakhstan as well as the processes and the most critical factors to consider in such system. The main contribution to knowledge is in providing a model framework including both formal and informal processes in complex where previous work has concentrated mainly on formal processes. The research is based on a survey study approach on a relatively small number of respondents. Thereby, no claims of generalizability beyond those case studies can be made.

5. References
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