

# Drivers of productivity among construction workers: A study in a developing country

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## Abstract

This paper reports on a study of factors affecting productivity among members of the construction workforce in Turkey. A survey of 82 construction firms in Turkey is undertaken using a questionnaire of 54 questions directed to managers, engineers, architects, and other technical staff. Using the results of the survey, economic and socio-psychological factors that affect labour performance are evaluated and discussed in detail. The results show that monetary factors remain pre-eminent in influencing productivity, but that socio-psychological factors appear to be of increasing importance in this developing economy.

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## 1. Introduction

Productivity is one of the most important factors affecting the overall performance of any organisation, large or small. At the micro-level, improved productivity decreases unit costs and serves as an indicator of project performance. At the macro-level, improved productivity is a vital tool in countering inflationary effects and determining wage policies. Improved productivity is thus always counted among the basic means of solving economic problems. It is increasingly recognised that capital alone is an inadequate means of producing more wealth or for starting a business in developing countries. Improved productivity is also required; if all production inputs are well utilised, capital improvements and enhanced productivity go hand in hand. In other words, increased productivity enhances investments without any burden to governments. In addition to the advantages at this fundamental level, the advantages of productivity improvement can be summarised as follows:

- decreased total cost and duration of production;
- improved quality;

- growth in market share of product;
- increased employment and wages without inflationary pressures; and
- enhanced purchasing capacities among employees, employers, and customers.

It is generally accepted that human resources (HR) represent the most variable, uncontrollable, and important element in production. Moreover, because HR serves as the connecting link in all production inputs appropriate to clients' demands, HR is recognised as a vital strategic resource for any organisation in ensuring improved productivity and industry competitiveness. With effective utilisation of HR, the productivity of all other production inputs (such as materials and equipment) is simultaneously enhanced, and all of the benefits available through improved productivity are realised. However, unemployment continues to be a problem in most developing countries (such as Turkey), while a lack of qualified labour in these same countries ensures a continuation of poor productivity [1].

The two most prominent features of the economies of developing countries are: (i) low levels of education, training, and skill among the workforce; and (ii)

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insufficient infrastructure. This combination of factors means that much of the competitive advantage enjoyed by developing countries in terms of cheap labour is lost when compared with developed countries. One of the considerable advantages enjoyed by developed countries is their ability to organise production with relatively high productivity. In most circumstances they can achieve this by using resources optimally without being constrained by a relative shortage of skilled labour. However, even in developed countries, poor labour productivity can occasionally present difficulties. For instance, the strong economic expansion and high levels of wealth experienced in the USA at the end of the 1990s created some shortfalls in skilled labour in several regions. This forced contractors to hire suboptimal workers to fill the gaps—leading to a drop in productivity among the construction labour force, even in a period of economic expansion [2].

Many factors have the potential to affect the productivity of employees. Among these factors, there is anecdotal evidence that both *economic* factors and *socio-psychological* factors are frequently mentioned by workers themselves as being relevant. However, previous studies in this field have failed to undertake a comprehensive classification and evaluation of the factors affecting productivity, and there have been few (if any) studies of these matters in developing countries, such as Turkey. The present paper therefore undertakes a survey among construction workers in Turkey with a view to determining, defining, and evaluating the important factors—both economic and socio-psychological—that influence labour productivity in this workforce.

## 2. Research methodology

The Turkish Employers' Association of Construction Industries (TEACI) and the Turkish Contractors Association (TCA) represent 187 construction firms in Turkey. These firms execute approximately 70% of the total investments made in this industry in Turkey, and also undertake approximately 90% of the construction work performed abroad by Turkish firms. Through the TEACI and the TCA, telephone conversations were conducted with directors of the 187 firms represented by the organisations. In these conversations, the nature of the present study was explained. Of the 187 firms, 82 (43.85%) responded positively. The remainder refused to be involved for various reasons. Nevertheless, this relatively high response rate was an adequate representation of the study population as a whole.

To obtain the data required for the study, a questionnaire comprised of 54 detailed questions under 18 subject headings was prepared [3]. This questionnaire was directed to a variety of managers, engineers, architects, and other technical staff—largely by face-to-face interview. In ten firms that could not be contacted directly, the questionnaire was conducted by e-mail.

To analyse the data provided by the questionnaire, two statistical methods were used. The first was to calculate the frequencies (in percentage terms) of the various answers received. The second was to calculate a relative importance index (RII). For this purpose, a rating scale of 1–5 was adopted with '1' representing the lowest level of effect and '5' representing the highest level of effect. The RII was calculated as follows:

$$\text{RII} = \frac{\sum_{i=1}^5 W_i X_i}{\sum_{i=1}^5 X_i} \quad (1 \leq \text{RII} \leq 5). \quad (1)$$

In this equation:

- $W_i$ , represented the rating given to each factor by the respondents on a range of 1–5 (with '1' representing 'not significant' and '5' representing 'extremely significant');
- $X_i$ , represented the percentage of respondents scoring; and
- $i$ , represented the order number of respondents.

The numerical values calculated by the above formula were then differently classified because a single point or number changing from 1 to 5 in questions no longer symbolises each verbal scaling expression in the evaluation phase. On the contrary, these five expressions are defined in significance intervals of 0.8 as follows:

- $1.00 \leq$  'not significant' (NS)  $\leq 1.80$
- $1.80 <$  'somewhat significant' (SS)  $\leq 2.60$
- $2.60 <$  'significant' (S)  $\leq 3.40$
- $3.40 <$  'very significant' (VS)  $\leq 4.20$
- $4.20 <$  'extremely significant' (ES)  $\leq 5.00$

Having calculated the RII, the percentages of respondents in certain broader segments of the scale were calculated for each factor (those scoring 2 or fewer, those scoring 3, and those scoring 4 or more). These were used to rank factors in which relative importance indices were the same.

Meanwhile, in some questions, this five-point scale was formed with the expressions 'always', 'usually', 'sometimes', 'rarely', and 'never', appropriate to the type of question.

## 3. Results

The study considered factors in two categories—economic factors and socio-psychological factors.

The six *economic factors* that were considered were:

- timeliness of remuneration;
- amount of remuneration;
- social insurance;
- incentive payments;
- job security; and
- union membership.

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