

## **PIdentification and Ranking of Factors in Labor Productivity in Türkiyeiş Bankası Using AHP**

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### **ABSTRACT**

*The goal of bank managers is to make optimal use of resources and human resource management is especially important in this process. The purpose of this research was to identify and rank the factors in labor productivity of Türkiyeiş Bankası using the AHP technique. The population consisted of all the branches of Türkiyeiş Bankası in Ankara (N = 127) in the first half of 2015. 16 banks were selected using cluster sampling. Data were collected using a researcher-made questionnaire with a Cronbach's alpha of 0.882. 4 employees were randomly selected from each bank to complete the questionnaire. Using the AHP technique in Expert Choice, the factors affecting labor productivity in sample banks were identified and ranked. Psychosocial, Individual, Management, Environmental, and Cultural factors were respectively the most important factors affecting labor productivity.*

**Keywords:** Labor productivity, banks, AHP.

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### **INTRODUCTION**

Through innovation and knowledge-based production, the private sector plays a key role in the economic development of countries in the form of non-governmental organizations (NGOs), small and medium enterprises (SMEs), industrial clusters, and entrepreneurs. These actors, as intermediate or final producers and consumers of goods and services, play a significant role in creating employment and attracting regional and international investments (Alvani et al., 2002).

Increasing productivity is an important economic development strategies. It can improve processes, enhance workplace relationships, correct individual and group behaviors, increase motivation, improve quality of life, create jobs, and increase wages and salaries (by improving the organization's production and profitability). Countries come to realize the importance of productivity when they are faced with economic difficulties such as inflation, recession, or downturn (Ellis and Dick, 2003).

The term productivity was probably first mentioned in an article in 1766 by the French mathematician Quesnay. In 1883, another Frenchman named Littré defined productivity as the "faculty to produce". Since the 20th century, productivity has been defined as the quotient obtained by dividing output by one of the factors of production. Labor productivity is the most important component of productivity. According to Peter Drucker, "the productivity of the newly dominant groups in the work force, knowledge workers and service workers, will be the biggest and toughest challenge facing managers in the developed countries for decades to come." (Hejazi, 2005). Identifying the driving

factors behind labor productivity is the first and most important step (Kim, 2001; Nakane, 2003). Identification and prioritization of these factors is essential to the development and implementation of relevant plans.

Banking industry is an important sector with critical functions. One way to evaluate performance in banks is to measure their labor productivity as a predictor of their profitability and competitiveness. Due to intense competition, banks must obtain the maximum output (profit, employee satisfaction, customer satisfaction, etc.) from given inputs (assets, capital, workforce, etc.). The purpose of the present research is to identify the factors affecting labor productivity in Türkiye İş Bankası and rank them using the AHP technique.

### Literature Review

Kim (2001) found that IT investment plays a positive role in productivity growth by increasing value added and saving ordinary capital and labor. Ellis and Dick (2003) examined organizational behavior and showed that participatory management can improve productivity in group tasks.

Papadogonas and Voulgaris (2005) investigate the determinants of labor productivity growth at the firm level in the Greek manufacturing sector. The results showed that labor productivity growth is positively related to growth of net fixed assets per employee, export orientation and R&D activity. Firm size, employment growth and industry age negatively affected labor productivity growth.

Wright et al. (2008) examined the effect of the Chinese cultural architecture on motivating workplace behavior for enhanced productivity in Chinese workplaces. They showed that practicality is the basic value driving and emotion is the most important contingent factor driving Chinese workplace behavior.

Leung et al. (2008) studied the relationship between firm size and productivity. They found a positive relationship between firm size and both labor productivity and total factor productivity was observed in both the manufacturing and non-manufacturing sectors.

## MATERIALS AND METHODS

This research is a descriptive survey. The population consisted of all the branches of Türkiye İş Bankası in Ankara (N = 127). Ankara was divided into four parts and 4 branches were selected from each part. 4 employees (senior managers and experts) were randomly selected from each bank (N = 64). A questionnaire was developed in two parts. The first part recorded the demographic variables (gender, position, experience, and education) and the second part measured labor productivity in banks using five subscales: management, psychosocial, cultural, environmental, and individual factors. These factors were compared pairwise and were ranked using the AHP technique. The face validity of the questionnaire was assessed by a panel of experts and the instrument was revised based on their comments. Cronbach's alpha was used to determine the reliability of the instrument. The questionnaire was thus distributed among 30 bank employees and an alpha of 0.882 was obtained, which indicates the high reliability of the instrument.

The analytic hierarchy process (AHP) was used as a multi-criteria decision-making method. AHP is one of the most effective techniques for organizing and analyzing complex decisions. It was developed by Thomas L. Saaty in the 1970s and is based on pairwise comparisons.

Since the views of bank employees are not similar and are a function of various factors such as experience, position, and education, a weight was assigned to their responses: a weight of 1 for experience, a weight of 2 for education, and a weight of 3 for position.

## RESULTS

Figure 1 shows the priority of the factors affecting labor productivity in the branches of Türkiye İş Bankası. According to the respondents, psychosocial factors are the most important drivers of labor productivity (W = 0.407), followed by individual factors (W = 0.169), management factors (W = 0.156), environmental factors (W = 0.138), and cultural factors (W = 0.130).

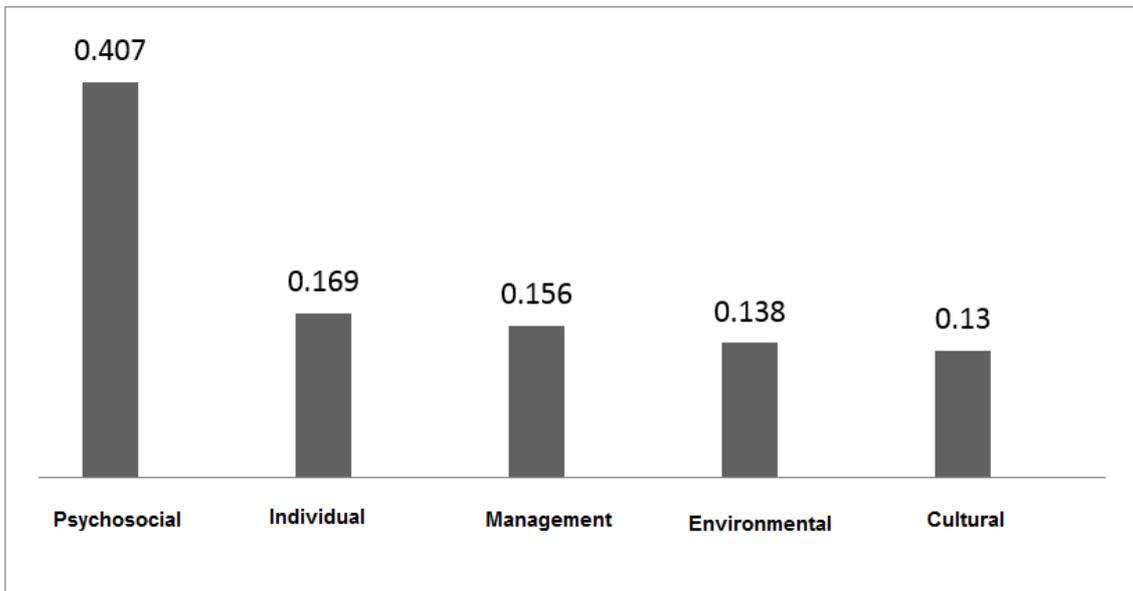


Figure 1. Prioritization of factors affecting labor productivityin TürkiyeişBankası

Theincompatibility rate( $\lambda_{max}W$ ) is calculated based on the following steps:

$$\text{Step 1. Estimating } \lambda_{max}W: \begin{bmatrix} 1 & 3.55 & 2.72 & 2.8 & 1.92 \\ 0.28 & 1 & 1.1 & 1.1 & 1 \\ 0.37 & 0.91 & 1 & 1.2 & 1 \\ 0.36 & 0.91 & 0.83 & 1 & 1.22 \\ 0.52 & 1 & 1 & 0.82 & 1 \end{bmatrix} \times \begin{bmatrix} 0.407 \\ 0.169 \\ 0.156 \\ 0.138 \\ 0.130 \end{bmatrix} = \begin{bmatrix} 2.07 \\ 0.74 \\ 0.64 \\ 0.73 \\ 0.78 \end{bmatrix}$$

Step 2. Calculating  $\lambda_{max}$ :

$$\begin{aligned} \lambda_{max1} &= \frac{2.07}{0.407} = 5.09 \\ \lambda_{max2} &= \frac{0.74}{0.169} = 4.38 \\ \lambda_{max3} &= \frac{0.64}{0.156} = 4.1 \\ \lambda_{max4} &= \frac{0.73}{0.138} = 5.29 \\ \lambda_{max5} &= \frac{0.78}{0.13} = 6 \end{aligned}$$

Step 3. Calculating mean  $\lambda_{max}$ :

$$\frac{\lambda_{max1} + \dots + \lambda_{max5}}{5} \rightarrow \frac{5.09 + 4.38 + 4.1 + 5.29 + 6}{5} = 4.97$$

Step 4. Calculating incompatibility index (II):

$$II = \frac{\lambda_{max} - n}{n - 1} \rightarrow \frac{4.97 - 5}{5 - 1} = \frac{-0.03}{4} = 0.01$$

Step 5. Calculating incompatibility index (IR):

$$IR = \frac{I.I.}{I.I.R_{.5 \times 5}} \rightarrow \frac{0.008}{1.12} = 0.001$$

The incompatibility rate is less than 0.01, indicating the consistency of the responses. Incompatibility rates higher than 0.1 suggest that the paired comparisons must be reconsidered.

*Psychosocial Factors*

According to the participants, perceptions of justice in the workplace was the most important psychosocial factor (W = 0.297), followed by manager-employee relations (W = 0.253), job satisfaction (W = 0.206), job security (W = 0.143), and workplace friendship (W = 0.101).

*Cultural Factors*

According to the respondents, opportunities for growth and promotion was the most important cultural factor (W = 0.582), followed by work ethic (W = 0.304), and compliance (W = 0.114).

*Environmental Factors*

According to the respondents, high-quality equipment was the most important environmental factor (W = 0.294), followed by workplace vitality (W = 0.203), the physical work environment (W = 0.197), workplace hygiene and safety (W = 0.159), and ergonomics (W = 0.147).

*Individual Factors*

According to the participants, the fit between personal interests and the job was the most important individual factor (W = 0.577), followed by the fit between personal skills and the job (W = 0.314) and work experience (W = 0.119).

*Management Factors*

According to the respondents, a competent supervisor was the most important management factor (W = 0.471), followed by merit-based promotion (W = 0.313), and on-the-job training (W = 0.216).

Finally, a consolidated matrix was created from the scores of all the criteria and factors, and the factors were ranked. Table 1 shows that perceptions of justice in the workplace has the greatest effect on labor productivity in TürkiyeişBankası.

**Table 1. Ranking of the factors and dimensions along with their relative weights**

Factors	Factor Weight	Sub-factors	Group Weight	Final Weight	Rank
Management	0.156	Competent Supervisor	0.471	0.059	6
		OTJ Training	0.216	0.023	12
		Merit-Based Promotion	0.313	0.023	12
Psychosocial	0.407	Employee-Manager Relations	0.253	0.156	2
		Job Security	0.143	0.057	7
		Perceptions of Justice in the Workplace	0.297	0.189	1
		Workplace Friendliness	0.101	0.029	11
		Job satisfaction	0.206	0.115	3
Cultural	0.130	Work Ethic	0.304	0.004	17
		Opportunities for Growth and Promotion	0.582	0.011	14
		Compliance	0.114	0.001	19
Environmental	0.138	Physical Work Environment	0.197	0.008	15
		Workplace Hygiene and Safety	0.159	0.005	16
		Quality of Equipment	0.294	0.037	9
		Workplace Vitality	0.203	0.016	13
		Ergonomics	0.147	0.002	18
Individual	0.169	Fit between Personal Skills and Job	0.314	0.097	5
		Fit between Personal Interests and Job	0.577	0.107	4
		Work Experience	0.119	0.033	10

**DISCUSSION AND CONCLUSION**

In this research five sets of factors affecting labor productivity in TürkiyeişBankası (management, psychosocial, cultural, environmental, and individual factors) were identified and ranked using AHP in Expert Choice software. The results showed that psychosocial factors had the strongest effect on labor productivity, followed by individual factors, management factors, environmental factors, and cultural factors. This is consistent with the results of Yumuşak(2008), Çelen and Demir (2010), Bahramiet al. (2013), Taleghani et al. (2011), and Wright et al. (2008), all of which addressed the factors affecting labor productivity in different work environments.

According to the participants, psychosocial factors were the most important predictors of labor productivity ( $W = 0.407$ ), while management factors were the least important predictors of labor productivity ( $W = 0.169$ ). This is inconsistent with the results of Bahrami et al. (2013) who found that management factors had the greatest effect on labor productivity in National Bank of Iran. The conflicting results can be attributed to the different organizational structures of Turkish and Iranian banks. However, both studies showed that individual factors are the second most important factors in labor productivity.

Finally, factors affecting labor productivity in Türkiye İş Bankası were ranked in order of importance using the AHP technique: (1) perceptions of justice in the workplace, (2) employee-manager relations, (3) job satisfaction, (4) fit between personal interests and job, (5) fit between personal skills and job, (6) competent supervisor, (7) job security, (8) merit-based promotion, (9) high-quality equipment, (10) work experience, (11) workplace friendliness, (12) on-the-job training, (13) workplace vitality, (14) opportunities for growth and promotion, (15) physical work environment, (16) workplace hygiene and safety, (17) work ethic, (18) ergonomics, and (19) compliance. As can be seen, perceptions of justice in the workplace is the most important factor in labor productivity.

Overall, the results showed that all the identified factors significantly affect labor productivity in Türkiye İş Bankası, albeit to varying degrees. The present findings can help managers and employees of public and private banks in increasing labor productivity.

#### Implications for Practice

1. Labor productivity in Türkiye İş Bankası can be improved through better and more constructive employee-manager relations. Bank CEOs must be honest with employees and solve any problems through effective interaction with them.
2. Labor productivity in Türkiye İş Bankası can be increased by developing a merit system whereby employees are promoted based on their skills and efficiency. Such a system will increase employee satisfaction and ultimately improve productivity.
3. By performing carefully designed interviews during recruitment, banks can recruit employees whose interests and skills match the requirements of the job.

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