Relationship between Human Resource Strategies and Employees’ Innovation Performance: An Application

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Abstract

The purpose of this study is to examine the relationship between human resource strategies and employees' innovation performance using a university hospital as a case study. For this purpose, the study recruited a total of 353 physicians and other health care employees working in the Ministry of Health, Ordu University Education and Research Hospital. Data were collected using the questionnaire form consisting of a human resource strategies scale and an innovation performance scale. Pearson correlation and regression analyses were used to determine the relationship between the human resource strategies and employees' innovation performance. Significant positive correlations were found between human resource strategies and innovation scale's sub-dimensions. It was also determined that the strategic training was at least two times more effective than the sub-dimension of performance-based rewarding and teamwork development in process and service innovation. Thus, it is suggested to give prior place to educational activities in human resource practices to increase the innovation performance of education and research hospitals.

Keywords: Health care employees, innovation, performance-based rewarding, strategic training, teamwork development.

INTRODUCTION

Hospitals where new management techniques have been intensively applied in recent years together with constantly evolving technology occupy a special place in that they serve humanity and human health through their human resources and their knowledge. This requires health care institutions to continuously develop their health services and to shape the services of diagnosis, treatment and rehabilitation by using new methods. A more efficient use of existing human resources will enable health institutions to work more effectively. In this context, the strategies used to increase the administrative effectiveness of human resources are among issues that hospital managers need to think about separately. Therefore, evaluation of human resources as a strategic asset, employees’ participation in continuous learning activities, career development trainings, and training courses for understanding team work and quality management, etc. have gained importance in human resource practices. In addition, in the related literature, there are several studies dealing with the great effect of the importance attached to human resources on innovation which is also an important value for enterprises. As it is known, innovation is the part of ideas generated in an organization which has turned into values, and closely related to the cultivation and management of human resources (Laursen, 2002). In recent years, both the increase in competition between hospitals and the growing importance of human life have required hospitals to continuously improve the status quo and do something different. It has also entailed all hospitals, whether public or private, making innovations.
Human Resources Strategies

In studies on the process of creation and implementation of organizational strategies, human resource management (HRM) is defined as a set of activities designed to influence individual behavior or as a system of human resource activities designed to achieve the objectives of an organization (Ekinci, 2008; Chen and Huang, 2009; Unnu et al., 2009). All processes from the recruitment of an employee to the termination of the employment, including compliance training, wage adjustment, her/his legal bond with the company, performance evaluation, her/his efficiency, and the satisfaction of individual and social needs are carried out within HRM practices (Öğüt et al., 2004). The number of the studies which emphasize the strategic importance of HRM and attach great importance to the practices of HRM have increased especially in the last ten years (Öğüt et al., 2004; Akdemir, 2005; Unnu et al., 2009). According to scientific studies on this subject, these strategies consist of teamwork development and personnel empowerment, performance evaluation and strategic training (Laursen and Foss, 2003; Lau and Ngo, 2004; Lopez et al., 2006, Ling and Nasurdin, 2010; Chang et al., 2011; Gulsoy, 2013).

Strategic training can be expressed as the adaptation of organizations to changing competitive conditions and the transformation of existing human resources knowledge and skills into new products and/or services in order to respond constantly increasing or changing client (patient) needs. Training is also important in reducing the complexity caused by technology used in organizations (Lau and Ngo, 2004). Performance-based rewarding means responding to the performance of human resource for ideation and innovation activities which are vital for every organization. This strategy includes granting financial rewards as well as immaterial rewards such as praise and recognition to individuals, teams and departments which deliver an innovative performance. Performance evaluation is in general a set of works carried out to determine the success of employees and develop them or a multi-stage process of determining the performance level of employees in an organization in accordance with specific purposes (Bilgin, 2001). For instance, considering human resource strategies as innovation-oriented, the measurement and rewarding of innovation performance will be among human resource strategies.

Development of teamwork which is one of the human resource strategies is important for increasing the innovation potential. Many studies have also emphasized that team-oriented work increases the innovation capacity (Anderson and West, 1998; Mathisen et al., 2004). Teamwork in organizations positively affects innovation through bringing together employees from different departments and consequently achieving synergy (Lau and Ngo, 2004). However, at this very point, it is an important criterion that leaders strive to create a culture of teamwork and to reestablish the existing team culture in an innovative structure.

Innovation

In recent years, the concept of innovation has attracted increased attention from both academicians and practitioners. A reason for this interest is that contemporary organizations operate in rapidly changing, competitive, and turbulent environments requiring continuous renewal and adaptability (Mathisen et al., 2004). Innovation is the achievement of a new or significantly improved production, offering a new marketing, or a new organizational method in workplace events, in-house applications, and external relations (Elçi, 2006; Karagöz, 2009). Elements used in innovation are technical preparations, finance, and human resources. The most important one of these elements is, of course, human resources. For an organization to achieve an innovation, organizational factors need to support innovative thinking. In other words, in non-innovative enterprises there are organizational factors that prevent innovation; however, in innovative enterprises there are organizational factors that support innovation (Naktiyok, 2007). The positive effect of innovative elements on employees will naturally affect innovation performance. Innovation performance represents the performance of employees in creating innovations that will benefit an organization (Avcı, 2009).

The objective of the present study was to determine the relationship between the human resources strategies and innovation performance of the employees working in Turkish Republic Ministry of Health, Ordu University Education and Research Hospital.

METHOD

The research hypotheses

Hypotheses developed as a result of the literature review and the pilot application is expressed in Table 1.

Study Group

The study was carried out on July 2013 in The Ministry of Health and Ordu University Education and Research Hospital, Turkey. The study population consisted of all constitute physicians and other health care providers (nurses, health
Table 1. The research hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H₁</td>
<td>There is a positive relationship between the strategic training and performance of innovativeness process.</td>
</tr>
<tr>
<td>H₂</td>
<td>There is a positive relationship between rewarding based on performance and performance of process innovativeness.</td>
</tr>
<tr>
<td>H₃</td>
<td>There is a positive relationship between teamwork development and performance of process innovativeness.</td>
</tr>
<tr>
<td>H₄</td>
<td>There is a positive relationship between the strategic training and performance of service innovativeness.</td>
</tr>
<tr>
<td>H₅</td>
<td>There is a positive relationship between performance-based rewarding and performance of service innovativeness.</td>
</tr>
<tr>
<td>H₆</td>
<td>There is a positive relationship between teamwork development and performance of service innovativeness.</td>
</tr>
</tbody>
</table>

Data Collection Tool

Data were collected using two questionnaire forms: a) Human Resource Strategies (HRS) Scale b) Innovation Performance scale (IP). As a result of the reliability analysis (Cronbach's alpha) the reliability coefficient was found 0.886 which made in order to determined its own internal consistency of the answers which given to the questionnaire of the staff of the Ministry of Health Ordu University Education and Research Hospital, on the value of 0.70 that enough in ensuring the reliability of the research (Altunışık et al., 2007). The HRS form consists of 3 subscales called as Performance-based Rewarding (PBR), Strategic Training (ST) and Teamwork Development (TD). PBR and TD scales were adopted from a battery of items used to HRS in previous surveys (Lau and Ngo, 2004) and validated in similar setting (Peck, 1994; Lau and Ngo, 2001). ST scale was adopted from a battery of items used to HRS in previous surveys (Lopez et al., 2006) and validated in similar setting (Pfeffer, 1998; Yahya and Goh, 2002). The internal consistency reliability coefficients (Cronbach’s alpha) of relevant items in the original scale were 0.57 and 0.69 (Peck, 1994). ST was measured by three items in this study with a reliability coefficient of 0.783. PBR was also measured by three items, with a reliability coefficient of 0.796. TD was measured by five items, with a reliability coefficient of 0.783.

The IP form consists of 2 subscales called as Process Innovativeness (PI) and Service Innovativeness (SI). PI and SI scales were adopted from a battery of items used to innovation in previous surveys (Wang and Ahmed, 2004; Skerlavaj et al., 2010). PI and SI scales were also measured by three items with a reliability coefficient of 0.673. SI was also measured by three items in this study with a reliability coefficient of 0.714.

All items are scored using a multiple five-point Likert scale with response options ranging from 1= “Strongly Disagree” to 5 = “Strongly Agree”.

Ethical Considerations

Before the study, the required ethics committee approval by Ordu University and written permission by the Ministry of Health and Ordu University Education and Research Hospital were obtained. The aim of this study was explained to the hospital staff during the data collection phase, and thus the “informed consent principle” was fulfilled.

Statistical Analysis

The internal consistency of the factors was calculated with Cronbach’s alpha. The data was initially examined for being compatible with normal distribution by Kolmogorov Smirnov test. Also, descriptive statistics are presented in Table 2. To test our hypotheses, Pearson correlation and regression analyses were used. All correlations were significant at the .01 level. To fit a regression model describing quantitative relationship between a response variable (processs or service innovation) and one or more explanatory variable such as team development, strategic training and performance-based
remuneration, least squares (LS) method was used, due to the simplicity of the idea of minimizing the sum of squared residuals and the interpretability of the final model parameter estimates (Cankaya, 2009; Perez et al., 2013). Moreover, the values of variance inflation factor (VIF) quantifying the severity of multicollinearity in least squares regression analysis was estimated. Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated, meaning that one can be linearly predicted from the others with a non-trivial degree of accuracy. As a common rule of thumb, if any of the VIF is greater than 10, there is a multicollinearity problem ( Kutner et al., 2004; Sangun et al., 2009). All the computational work was performed by means of MINITAB (MINITAB, 2000).

RESULTS

Statistical calculation of the research carried out with the order as to determine the normality test, descriptive statistics, correlation and regression analysis and the findings are presented in the order of the statistical process. As a result of Kolmogrow-Smirnov test determined that the data is normally distributed (P>0.05).

The degree and direction of the relationship between the variables of the research was determined by Pearson correlation analysis; the findings were given in Table 3.
Table 4. Regression analysis results for process innovation

<table>
<thead>
<tr>
<th>Factors</th>
<th>b_i</th>
<th>s_b_i</th>
<th>t</th>
<th>P-value</th>
<th>VIF values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>3.737</td>
<td>0.739</td>
<td>5.058</td>
<td>&lt;0.001</td>
<td>5.058</td>
</tr>
<tr>
<td>Team development</td>
<td>0.230</td>
<td>0.041</td>
<td>5.578</td>
<td>&lt;0.001</td>
<td>1.413</td>
</tr>
<tr>
<td>Strategic training</td>
<td>0.465</td>
<td>0.065</td>
<td>7.097</td>
<td>&lt;0.001</td>
<td>1.474</td>
</tr>
<tr>
<td>Performance-based rewarding</td>
<td>0.096</td>
<td>0.056</td>
<td>1.703</td>
<td>0.089</td>
<td>1.125</td>
</tr>
</tbody>
</table>

The dependent variable: Process innovation; $R^2$: 0.362; $R_{adj}^2$: 0.360; $F$=66.145 ($P<0.001$); $b_i$: regression coefficient; $s_{b_i}$: standard errors of the regression coefficients

Table 5. Regression analysis results for service innovation

<table>
<thead>
<tr>
<th>Factors</th>
<th>b_i</th>
<th>s_b_i</th>
<th>t</th>
<th>P-value</th>
<th>VIF values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>3.809</td>
<td>0.488</td>
<td>7.812</td>
<td>&lt;0.001</td>
<td>7.812</td>
</tr>
<tr>
<td>Team development</td>
<td>0.186</td>
<td>0.027</td>
<td>6.848</td>
<td>&lt;0.001</td>
<td>1.413</td>
</tr>
<tr>
<td>Strategic training</td>
<td>0.341</td>
<td>0.043</td>
<td>7.883</td>
<td>&lt;0.001</td>
<td>1.474</td>
</tr>
<tr>
<td>Performance-based rewarding</td>
<td>0.245</td>
<td>0.037</td>
<td>6.603</td>
<td>&lt;0.001</td>
<td>1.125</td>
</tr>
</tbody>
</table>

The dependent variable: Service innovation; $R^2$: 0.340; $R_{adj}^2$: 0.337; $F$=120.568 ($P<0.001$)

In this study, significant positive correlations were found between the sub dimensions of human resource strategies (PBR, ST and TD) and employees’ innovation performance (PI and SI). Among these, the highest correlation was found between ST and PI ($r=0.544$; $P<0.01$). Also, a significant positive correlation was found between employees’ innovation performance (PI and SI) ($r=0.711$; $P<0.01$).

Impact of team development, strategic training and performance-based remuneration on process innovation performance were determined by multiple regression analysis; the findings were given in Table 4.

Impact of team development, strategic training and performance-based rewarding on service innovation performance were determined by multiple regression analysis; the findings were given in Table 5.

DISCUSSION AND CONCLUSION

A reliability analysis was conducted in order to reveal the internal consistency of the responses made to the questionnaire used to define the human resource strategies and innovation performance of the employees working in Turkish Republic Ministry of Health, Ordu University Education and Research Hospital. The calculated Cronbach’s alpha coefficient (0.886) was higher than 0.70 regarded as acceptable (Altunışık et al., 2007).

In recent years, innovation has become an indispensable paradigm for both the industry and the service sector which includes health services. Innovation is defined as simply “all kinds of ideas and thoughts that will add value to an organization”. It has been appreciated as a distinct concept due to challenging competitive conditions. Many factors affect innovation outputs in an organization. As it is known, human resources have a special place in these factors. As long as the knowledge of human resources turns into values in institutional terms, innovation can be achieved. In this context, the motivation of human resources is important in achieving the desired results. Amabile (1996) has stated that the motivation has a major impact on creativity. At the point of motivation, it will be appropriate to address the human resource management practices as a factor in strategic training.

In reviewing the literature (Lau and Ngo, 2004; Chen and Huang, 2009), there are a great number of studies indicating that performance-based rewarding, development of teamwork and in-service training activities have an important role in motivation. Employees in an organization primarily want their performances to be rewarded and mostly desire financial rewards. However, the effect of immaterial rewards such as appreciation and supporting employees for their success are great in institutions of the information age.

In addition, the participation of individuals working in an organization in teamwork is also another motivating factor. In modern businesses, the performance of well-trained human resources can be elevated to a higher level through collective work. Teamwork is extremely important in terms of the emergence of synergy. Synergy is highly important especially in health care institutions which deal with human health. Besides collective work skills, continuous training
activities of human resources are another element to provide motivation in terms of innovation performance. As a feature of knowledge-intensive organizations, human resource is one of the motivating factors of training needs.

In this study, strategic training, performance-based rewarding and teamwork development which are among human resource management strategies are discussed. At this point, the strategic importance of these dimensions may be considered. Indeed, Lau and Ngo (2004) have emphasized in their studies that these dimensions are effective in innovation performance.

In reviewing the related literature, it was seen that only a few studies were conducted to determine the effect of strategic human resource management on innovation. However, there are many studies which are similar to the present study, but do not directly deal with the same issue. On the other hand, there is no study in the literature which is exactly the same as the present study which deals with the relationship between strategic human resources and innovation by the example of a hospital. Thus, this study is thought to contribute to the literature.

According to the study findings, there is a stronger relationship between the dimensions of process and service innovation and strategic training than between the dimensions of performance-based rewarding and teamwork development and strategic training. It thus indicates that the hospital staff attaches great importance to their strategic training in increasing the innovation performance. The findings of this research match up with the findings of Lau and Ngo’s (2004) study.

Table 4 and 5 show the coefficients of the estimated equations to determine the effects of sub-dimensions of human resource strategies on both process and service innovation, respectively. While the regression coefficient of performance-based rewarding used to estimate the process innovation was statistically significant at the level of 0.10 ($P = 0.089$), the other two sub-dimensions yielded a statistical significance at 0.001. There is no multicollinearity between the independent variables in the model (sub-dimensions of human resource strategies: teamwork development, strategic training and performance-based rewarding). In the model, it was revealed that the most effective sub-dimension of human resource strategies in the process innovation was strategic training. The findings of this research match up with the findings of Lau and Ngo’s (2004) study. The all coefficients of the regression equation to predict the service innovation were found to be statistically significant. The findings revealed that strategic training had at least two times greater effect on the dimensions of the process and service innovation than performance-based rewarding and teamwork development. This result indicates how important training is for the human resource who works in a health care institution. The reason of such a result can be explained on the grounds that health care is a knowledge-intensive work. The employees requested to be useful for an organization tend to achieve this objective by developing themselves continuously. In this sense, the present study indicates the strategic importance of the training activities organized for the employees by the said hospital, in that it is an institution which renders both health care and training services. The other result of the study is the strong relationship of the performance-based rewarding and teamwork development with the innovation performance. It is possible to support this result by the results of similar studies in the literature (Lau and Ngo, 2004; Chen and Huang, 2009).

In conclusion, to improve the innovation performance of health care workers employed in hospitals, managers should pay a strategic attention to human resource practices. Training should be the priority in these strategic sub-dimensions. In this context, training needs of hospital staff should be planned to be comprehensive, effective and continuous by the managers.

**Conflict of interest**

The authors have no conflicts of interest.

**Authors’ contributions**

Dr Cankaya carried out the design and coordinated the study, participated in most of the experiments and prepared the manuscript. Dr Aksay and Dr Enginyurt provide assistance in the design of the study, coordinated and carried out all the experiments and participated in manuscript preparation. All authors have read and approved the content of the manuscript.

**REFERENCES**


