# Simple and multiple relations between strategic human resource management and organizational innovation at Iranian Universities

Susan Bahrami[1], Saeed Rajaeepour[2], Taghi Aghahosseini[3], HassanAli BakhtiarNarsabadi[4]

1- Student of Educational Administration, Faculty of Education and Psychology, University of Isfahan, Isfahan, Iran

2- Assistant Professor of Educational Administration, Faculty of Education and Psychology, University of Isfahan, Isfahan, Iran.

3- Assistant Professor of Educational Administration, Bahonar Research Center, Isfahan, Iran.

4- Associate Professor of Educational philosophy, Faculty of Education and Psychology, University of Isfahan, Isfahan, Iran.

Bahrami837@gmail.com

## ABSTRACT

Human resources are considered as one of the most important competitive advantages of organizations. University executives should be aware of how to manage this strategic resource and how to utilize it effectively. Moreover, organizational innovations are necessary to cope with and influence environmental changes. A descriptive-correlative research method was utilized. The Statistical population included all faculty members of state Isfahan universities during 2010-2011year from which a sample 492 was selected through stratified random sampling. The data gathering instruments included strategic human resource practices (SHRP) questionnaire based on Chen and Hung's study (2009), and organizational innovation questionnaire based on Hongming's et al study (2007). The questionnaires' face and content validity confirmed by experts and their reliability were estimated 0.95 and 0.93 respectively through Cronbach's alpha coefficient. The gathered data was analyzed through descriptive and inferential statistics. (SHRP) and organizational innovation mean scores were lower than mean criteria and there was a significant multiple correlations between (SHRP) and organizational innovation. Beta coefficients among (SHRP) and administrative innovation and technical innovation were significant and no autocorrelation existed and regression model were significant. Faculty member's opinions about relationship between (SHRP) and administrative innovation with regard to demographic characterizations were the same. Educational organizations in general and universities in particular should provide a setting for administrative and technical innovations. Proper human resource practices can facilitate this matter.

**Keywords:**  Strategic Human Resource Management, Organizational Innovation, Universities.

## 1. Introduction

Higher education has had a close relation with social development. World universities are educating millions of students to meet their country demands and science based economics is a priority in advanced countries.

*Susan Bahrami, Saeed Rajaeepour, Taghi Aghahosseini, HassanAli BakhtiarNarsabadi*

One of the important tools for organization survival and achieving its goals is human resources. Human resources are considered as most important capital and the main source of competitive advantage for every organization. The necessity of having strategic view toward human resources is an irrefutable subject which its importance is increasing with environmental changes. The framework for formation of strategies of human resources and integrating them, are the main challenge of universities executives.

Strategic human resource management objective is to create strategic capability by ensuring that skillful, committed and motivated employees could reach stable competitive advantage. So, individual and group needs of organization are provided through designing and performing coherent and operative plans of human resources.[1] Strategic human resource management has practices or duties that are executed in organizations to provide coordinated and suitable human resources and in fact strategic human resource practices means that organizations can affect employees' skill, attitude and behavior with respect to their job to gain organizational objectives.[2] Researches results show that these practices are varied: Chen and Huang (2009) introduce these practices as training (increasing employees' personal abilities and skills in doing their duties and actualize some of potential abilities to create an interactive and knowledge-producer organization), compensation (all financial and non-financial advantages with respect to internal and external conditions of organization), performance evaluation (systematic evaluation of personnel works in relation with the how they do their jobs and determining the existing potentialities to grow and improve), staffing (in line with organization goals and strategies and finding opportunities and threats of the external environment of organization and determining strengths and weaknesses and important capabilities of existing resources) and participation (in decision making and using their suggestions to improve and expand organization).[3]

On the other hand, changing environment of higher education, forces the administrator to use some instruments to face environmental uncertainty in order to survive and to continue growth. Universities should be managed and lead in the way that innovation become a part of daily activities and culture for all faculty members' and university; the ability of acceleration in publishing and turning this science to a capital that is a motive to improve educational functions, is necessary.[4] Organizational innovation needs converting ideas to usable organizational forms and this idea has been utilized to advance organizational revenue.[5] Innovation can be classified in three different ways:

**Administrative Innovation and Technical Innovation**

Administrative innovation is related with changing organizational structure and administrative processes and technical innovation is related with changing product, services and process technology.[6] In this research this classification has been used.

**Product Innovation and Process Innovation**

Product innovation means "producing new products or responding market needs and process innovation means "new elements used in organizational products or services".[5]

**Fundamental Innovation and Incremental Innovation**

Radical innovation emphasizes on managers' attitude shift and reinforcement of organization technical science resources and incremental innovation emphasizes on structure complexity and decentralization.[7]

Organizations by educational planning for their employees extend new knowledge and skills in them which provides potentials to raise innovative activities. Moreover, by determining compensation for challenging works can provide situation in which can be created.[8] Also performance evaluation can motivate employees and make them deal with innovative activities. Emphasizing on creating challenge and feeling success by performance evaluation can be a motivating factor for innovative operation.[9] To foster innovation in organization we need employees who are flexible, high risk and uncertainty standing. Organizations to achieve these characterizations should consider them while staffing.[10] Besides to foster innovation, organizations need participation of employees in organizational decision making. This is possible by encouraging employees to express new opinions.[11]

Chang & Lee(2008) studied cumulative capability of organizational science and innovation in organization by questionnaire and found that there is a significant relation between cumulative capability of science and innovation.[12] Hongming et al(2007) in investigating the relation among organizational learning and innovation and organizational performance by structural equation modeling showed that the correlation of organizational learning and organizational innovation is positive and significant.[13] Walker (2007) in evaluating the effect of innovation on characteristics of state organizations determined by questionnaire that organizations characteristics are not suitable to create organizational innovation and to foster organizational innovation they have to adopt severe environmental changes and the role of organization administrators is to create such a flexible environment.[14] Johnson & Kritsonis (2007) in investigating the effect of strategic planning on human resource management by standard questionnaire and participation of 400 teachers reached this conclusion that resource staffing, selection, compensation and training have played essential role in increasing the quality of education.[15] Jimenez& Sanz-Valle(2008) showed in Spanish organizations that using strategic human resource practices has significant effect on organizational innovation.[16] The main goal of this paper is to determine the relation of strategic human resource practices with organizational innovation in Isfahan state universities.

## 2. Materials and Method

The type of research was descriptive, correlative. Statistical society includes all tenured faculty members faculties (1830 people) of Isfahan state universities (University of Isfahan, University of Technology, University of Kashan, Isfahan University of medical Science and Kashan University of medical Science) in 2010- 2011 academic year. Sample size of 492 people was selected using stratified-random sampling method. Research tools were strategic human resource practices with 45 items questionnaire based on Chen and Hung (2009) model in ten degree scale of Likert and organizational innovation questionnaire with 32 items questionnaire based on Hongming et al (2007) model in ten degree scale of Likert.

To verify was questionnaires validity face and content reliability and authority opinions was used and reliability coefficient of questionnaires were estimated through Cronbach's alpha coefficient ($r_1 = 0.95$) and ($r_2 = 0.93$).

Questionnaires were distributed among examines by researcher who tried to attend for clarification if needed. To observe morality in research impartiality and avoiding bias by researcher, utilizing newest informative and scientific resources, observing honesty while analyzing data and avoiding distortion of data and keeping questionnaire data confidential were considered.

Data was analyzed through descriptive statistics such as frequency distribution, percent, standard deviation and Pearson correlation coefficient and inferential statistics such as univariate t-test, Fisher test, multiple regression and analysis of covariance utilizing SPSS version 19 and LISREL (Linear Structure Equation Model).

## 3. Results

Results show that strategic human resource practices mean was lower than mid level. Confidence intervals show that mean score of training is between 3.92 and 4.28, compensation between 3.62 and 3.92, Performance evaluation between 4.4 and 4.77, Staffing between 4.3 and 4.66 and participation between 4.23 and 4.64 with probability of 99 percent (Table 1).

**Table 1:** Strategic human resource practices mean ($\overline{X}$ =5.5, df= 479)

| Indicators / SHRP | $\overline{X}$ | S | SK | $\overline{X}$ d | tob | P | Confidence intervals (α = %99) |
|---|---|---|---|---|---|---|---|
| Training | 4.1 | 1.49 | .67 | -1.39 | -20 | 0.000 | 3.92-4.28 |
| Compensation | 3.77 | 1.28 | .43 | -1.73 | -29 | 0.000 | 3.62-3.92 |
| Performance evaluation | 4.59 | 1.56 | .68 | -0.91 | -12.7 | 0.000 | 4.4-4.77 |
| Staffing | 4.48 | 1.52 | .64 | -1.02 | -14.59 | 0.000 | 4.3-4.66 |
| Participation | 4.43 | 1.73 | .65 | -1.07 | -13.55 | 0.000 | 4.3-4.64 |
| Total | 4.29 | 1.17 | .84 | 1.21 | -22.4 | 0.000 | 4.16-4.43 |

Results show that organizational innovation mean was lower than mid level. Confidence intervals show that means score of administrative innovation was between 4.17 and 4.15 and means score of technical innovation was between 4.47 and 4.8 (Table 2).

**Table 2:** Organizational innovation mean ($\overline{X}$ =5.5, df= 479)

| Indicators / Organizational innovation | $\overline{X}$ | S | SK | $\overline{X}$ d | tob | P | Confidence intervals (α = %99) |
|---|---|---|---|---|---|---|---|
| Administrative | 4.33 | 1.36 | .95 | -1.16 | -18.6 | 0.000 | 4.17-4.5 |
| Technical | 4.63 | 1.44 | .55 | .86 | -13.09 | 0.000 | 4.47-4.8 |
| Total | 4.46 | 1.31 | .9 | -1.04 | -17.4 | 0.000 | 4.3-4.6 |

Also results show that calculated t values with 487 degree of freedom in significance level of (α= 0.01) were higher than table critical value. So correlation among them is significant statistically. Correlation coefficient of training and administrative innovation is 0.444 and determination coefficient is 0.198, correlation coefficient of compensation and administrative innovation is

0.328 and determination coefficient is 0.11, correlation coefficient of performance evaluation and administrative innovation is 0.639 and determination coefficient is 0.41, correlation coefficient of Staffing and administrative innovation is 0.662 and determination coefficient is 0.44 and correlation coefficient of participation and administrative innovation is 0.691 and determination coefficient is 0.477. Correlation coefficient of training and technical innovation is 0.364 and determination coefficient is 0.132, correlation coefficient of compensation and technical innovation is 0.218 and determination coefficient is 0.05, correlation coefficient of performance evaluation and technical innovation is 0.584 and determination coefficient is 0.344, correlation coefficient of Staffing and technical innovation is 0.618 and determination coefficient is 0.382 and correlation coefficient of participation and technical innovation is 0.617 and determination coefficient is 0.38 (Table3).

**Table 3:** Simple correlation between strategic human resource practices and organizational innovation

| Indicators / Variables | n | R | $R^2$ | tob | df | P |
|---|---|---|---|---|---|---|
| Training & Administrative Innovation | 480 | .444 | .198 | 10.58 | 478 | 0.000 |
| Compensation & Administrative Innovation | 480 | .328 | .11 | 7.6 | 478 | 0.000 |
| Performance evaluation& Administrative Innovation | 480 | .639 | .41 | 18.2 | 478 | 0.000 |
| Staffing& Administrative Innovation | 480 | .662 | .44 | 19.3 | 478 | 0.000 |
| Participation& Administrative Innovation | 480 | .691 | .477 | 20.8 | 478 | 0.000 |
| Training & Technical Innovation | 480 | .364 | .132 | 1.54 | 478 | 0.000 |
| Compensation& Technical Innovation | 480 | .218 | .05 | 4.8 | 478 | 0.000 |
| Performance evaluation& Technical Innovation | 480 | .586 | .344 | 15.8 | 478 | 0.000 |
| Staffing& Technical Innovation | 480 | .618 | .382 | 17.2 | 478 | 0.000 |
| Participation& Technical Innovation | 480 | .617 | .38 | 17.1 | 478 | 0.000 |

Results also showed that calculated F value with 5 and 474 degrees of freedom in significance level of ($\alpha = 0.01$) is higher than table critical value. Therefore there is significant multiple correlation between strategic human resource practices and administrative innovation (p = 0.000). Multiple correlation coefficients are 0.58 and modified determination coefficient is 0.575. So 57.5 percent of response variable can be explained by a combination of strategic human resource practices (Table 4).

**Table 4**: Multiple regression between strategic human resource practices and administrative innovation

| Indicators / Source | ss | df | ms | R | $R^2$ | $F_{ob}$ | P |
|---|---|---|---|---|---|---|---|
| Regression | 418.4 | 5 | 102.68 | .58 | .575 | 120.7 | 0.000 |
| Residual | 376.07 | 474 | .792 | | | | |
| Total | 894.4 | 479 | | | | | |

According to finding of table 5, Beta coefficient of award and administrative innovation was 0.009 which is not statistically significant (p = 0.798). But Beta coefficients of Training and administrative innovation was 0.147, Beta coefficient of Performance evaluation and administrative innovation is 0.264, Beta coefficient of Staffing and administrative innovation was 0.197 and Beta coefficient of participation and administrative innovation was 0.234 which are all statistically significant (p = 0.000). Variance inflation factor for predictor variables was between at least 1.34 and 2.75 which shows that there is no autocorrelation among them(Table 5).

**Table 5:** Correlation between strategic human resource practices and organizational innovation

| Indicators / SHRMP | β | Beta | Vif | **tob** | P |
|---|---|---|---|---|---|
| Constant | .28 | - | - | 5.1 | 0.000 |
| Training | .134 | .147 | 1.36 | 4.22 | 0.000 |
| Compensation | .009 | .009 | 1.33 | .256 | 0.798 |
| Performance evaluation | .215 | .246 | 2.16 | 5.61 | 0.000 |
| Staffing | .177 | .197 | 2.75 | 2.99 | 0.000 |
| Participation | .257 | .234 | 2.52 | 6.82 | 0.000 |

So regression model is significant and predictive model can be showed as follow:

$Y=0.83 + 0.134x_1 + 0.215x_2 + 0.177x_3 + 0.257x_4$

Analysis of covariance showed that observed F in level $p \leq 0.05$ regarding relationship between strategic human resource practices and administrative innovation according to demographic characteristics is not significant and Eta square for gender was 0.001, for seniority was 0.005, for age was 0.02, for academic rank was 0.002, for educational department was 0.02 and for university type was 0.007.

Results showed that calculated F value with 5 and 474 degrees of freedom in significance level of ($\alpha= 0.01$) is higher than table critical value. So there is significant multiple correlation between strategic human resource management practices and technical innovation (p= 0.000). Multiple correlation coefficients are 0.692 and modified determination coefficient is 0.474. So 47.5 percent of response variable can be explained by a combination of strategic human resource management practices (Table 6).

**Table 6:** Multiple regression between strategic human resource practices and technical innovation

| Indicators / Source | ss | df | ms | R | $R^2$ | $F_{ob}$ | P |
|---|---|---|---|---|---|---|---|
| Regression | 477.9 | 5 | 95.58 | .692 | .474 | 87.23 | 0.000 |
| Residual | 519.3 | 474 | 1.097 | | | | |
| Total | 997.27 | 479 | | | | | |

According to finding of table 7, Beta coefficients of training and technical innovation was 0.116, Beta coefficient of Compensation and technical innovation was -0.09, Beta coefficient of Performance evaluation and technical innovation is 0.215, Beta coefficient of Staffing and technical innovation was 0.259 and Beta coefficient of participation and technical innovation was 0.245 which are all statistically significant (p= 0.01). Variance inflation factor for predictor variables was between at least 1.33 and 2.75 which shows that there is no autocorrelation among them(Table 7).

**Table 7**: Correlation between strategic human resource practices and technical innovation

| Indicators SHRMP | β | Beta | Vif | tob | P |
|---|---|---|---|---|---|
| Constant | 1.5 | - | - | 7.87 | 0.000 |
| Training | .112 | .116 | 1.36 | 3.004 | 0.003 |
| Compensation | -.102 | -.09 | 1.33 | -2.376 | 0.018 |
| Performance evaluation | .239 | .259 | 2.16 | 5.31 | 0.000 |
| Staffing | .235 | .249 | 2.75 | 4.52 | 0.000 |
| Participation | .203 | .245 | 2.53 | 4.65 | 0.000 |

So regression model is significant and predictive model can be showed as follow:

$$Y = 1.5 + 0.112 X_1 + (-0.102) X_2 + 0.239 X_3 + 0.235 X_4 + 0.203 X_5$$

Also observed F in level $p \leq 0.05$ regarding relationship between strategic human resource management practices and technical innovation according to demographic characteristics is significant and Eta square for gender was 0.005, for seniority was 0.006, for age was 0.007, for academic rank was 0.009 which are not statistically significant but Eta square for educational department was 0.05 which is statistically significant (Figure1).
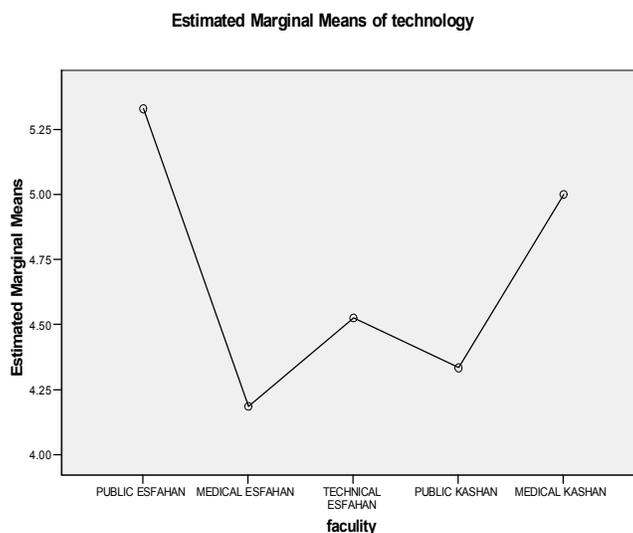


**Figure1:** Technical innovation mean profile in different educational departments

Eta square for educational department was for university type was 0.09(Figure2) which is statistically significant.

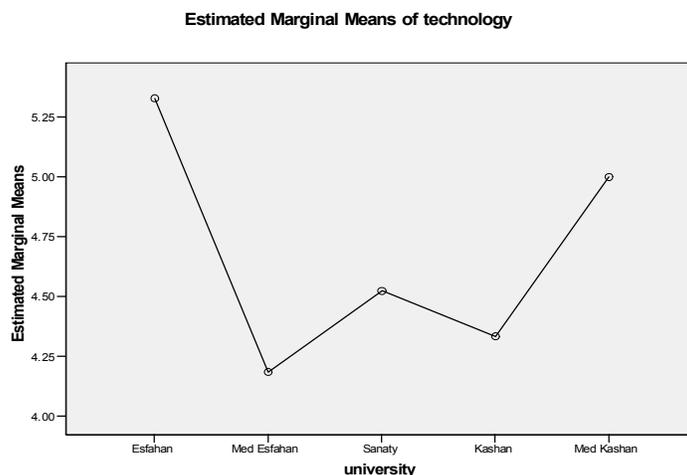**Estimated Marginal Means of technology**



**Figure1:** Technical innovation mean profile in different Universities

## 4. Discussions

Educational organizations are trying to achieve and save their competitive advantages to upgrade their key and fundamental competencies. Such efforts inevitably make them to emphasize on strategic human resource nature and on human resource strategy and organization strategy integration.

Research results showed that strategic human resource management practices mean and organizational innovations kinds mean were lower than mid level. These finding are in line with Walker (2007) study. Moreover simple correlation between each of strategic human resource management practices and kinds of organizational innovation was positive and significant. These findings are in line with Chen& Hung (2009) study.

There is also significant multiple relation between strategic human resource management practices and administrative and technical innovation in the universities. These findings are in line with Johnson& Kritsonis (2007) study and Jimenez & Sanz-Valle (2008) study.

## 5. Conclusions

Educational organizations due to fast environment changes on one hand and increasing demand on the other hand, should closely relate with continuous development of research and development units by increasing creativity and innovation. Valuable nature of R&D unit in organizations, make many researchers to consider innovation management as a key factor for productivity and emerging creativity in research and development organizations and organization lifetime.

In line with this to improve university strategic human resource management practices and facilitate innovation faculty participation in decision making, creating healthy environment, it is suggested that in service education for university administrators be held in fields of strategic management of human resources and administrative innovation.

## 6. References

1. Ferris, GR., Buckley, MR., Allen, GM. (1992). Promotion systems in organizations. Hum Resource Plan; 15(3): pp 47-68.

2. Collins, CJ. Clark, KD. (2003) Strategic human resource practices, top management team social networks, and firm performance: the role of human resource in creating organizational competitive advantage. Acad Manage J; 46(6): pp 740-51.

3. Chen, CJ. Huang, JW. (2009). Strategic human resource practices and innovation performance—the mediating role of knowledge management capacity. J Bus Res; 62(1): pp 104-14.

4. Wright, PM., Dunford, BB. Snell, SA. (2001). Human resources and the resource based view of the firm. J Manage; 27(6): pp 701-21.

5. Damanpour, F., Gopalakrishnan, S. (2001). The dynamics of the adoption of product and process innovations in organizations. J Manage Stud; 38(1): pp 45-65.

6. Damanpour, F., Schneider, M. (2009). Characteristics of innovation and innovation adoption in public organizations: assessing the role of managers. J Pub Adm Res Theory; 19(3): pp 495-522.

7. Scarbrough, H. (2003). Knowledge management, HRM and the innovation process. Int J Manpower; 24(5): pp 501-16.

8. Mumford, MD. (2000).Managing creative people: strategies and tactics for innovation. Hum Resource Manage Rev; 10(3): pp 313-51.

9. Jaw, BS. Liu, W. (2003). Promoting organizational learning and self-renewal in Taiwanese companies: the role of HRM. Hum Resource Manage; 42(3): pp 223-41.

10. Madsen, AS., Ulhøi, JP. (2005). Technology innovation, human resources and dysfunctional integration. Int J Manpower; 26(6): pp 488-501.

11. Tsai, W. (2002). Social structure of "competition" within a multiunit organization: coordination, competition, and intra organizational knowledge sharing. Organ Sci; 13(2): pp 179-90.

12. Chang, SC., Lee, MS. (2008). The linkage between knowledge accumulation capability and organizational innovation. J Knowledge Manage; 12(1): pp 3-20.

13. Hongming, XIE. Changyong, LIU. Chunhui, CHEN. (2007). Relationships among market orientation, learning orientation, organizational innovation and organizational performance: An empirical study in the Pearl River Delta region of Chin. Higher Education Press and Springer-Verlag. Front. Bus. Res. China; 1(2): pp 222–253.

14. Walker, RM. (2008). An empirical evaluation of innovation types and organizational and environmental characteristics: towards a configuration framework. J Pub Adm Res Theory; 18(4): pp 591-615.

15. Johnson, C., Kritsonis, WA. (2007). National Implications for Urban School Systems: Strategic Planning in the Human Resource Management Department in a Large Urban School District. The Lamar University Electronic Journal of Student Research. Spring: pp 1-19

16. Jiménez-Jiménez, D., Sanz-Valle, R. (2008). Could HRM support organizational innovation? Int J Hum Resource Manage; 19(7); pp 1208-21.