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# MEASURING THE IMPACT OF INNOVATIVE HUMAN CAPITAL ON FIRM'S PERFORMANCE: A CASE OF UAE GOVERNMENT

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**Abstract**

*The aim of the research is to evaluate the impact of innovative human capital (IHC) on the performance of firm. The research was conducted on the basis of hypotheses formulated from the study of the available literature. The research is conducted on firms affiliated to the government of the UAE. The data were collected from these firms using quantitative approach by conducting survey with the managers of organizations. The survey questionnaire consisted of the questions based on the four elements of the IHC mentioned in the research. The data were analysed using the multiple logit regression. The results indicated that the four elements of IHC job satisfaction, willingness to work, education, and training of the managers affect the process, product and service innovation accordingly and enhance the performance of firm. The research, however, lacks considerable R&D data and thus, opens the scope for future researchers to include this data in their research studies.*

*Keywords: Innovative Human Capital, Firm's Performance, UAE Government, Innovation*

## INTRODUCTION

Innovation is one of the important determinants of the growth in the regions, organizations and the economy (Montalvo, 2006). According to the Knowledge based theory, individuals play a central role as both the source and creator of the knowledge (Grant, 1996). Individuals are known to be the major actors in the process of innovation (Grant, 1996). Human capital can be referred to as the aggregation of skills and knowledge. Human capital helps in promoting the growth and development with the help of increased capital and labour productivity. In other

words, human capital can be regarded as the cement that holds together the innovation and knowledge systems together.

This research will however focus on measuring the impact of innovative human capital on the performance of the organizations, by taking the case of UAE government. UAE is focusing on building an economy that is knowledge based along with bringing a cultural renaissance and a state-of-the-art infrastructure. It is essential for the UAE to build human capital with the important skills that will be required for bringing innovation in the country (Byat & Sultan, 2014).

There is a lack of clear measure that can be used for measuring the human capital. There are however, some of the proxies that can be used to measure the human capital such as the training and education (Cohen & Levinthal, 1990).It has been recognized that the management capabilities of an individual are being complemented by their educational attainments. The softer elements of human capital such as open mindedness, trust, capabilities and work experience can help in examining the human capital (Ganotakis, 2012; Arvanitis & Stucki, 2012).

It is apparent that the human capital cannot be measured and defined effectively solely in terms of training and education. There is a need of holistic concept and measure of the human capital. Innovative Human capital is the new concept or measure that include tangible and intangible elements such as the willingness to change and job satisfaction. IHC includes the innovative aspects related to human capital and therefore, it is known as the Innovative Human Capital (IHC) (Gustafsson & Autio, 2011).

The major contributions of this particular study are summarised as follows: First, this study extends the measure of human capital so as to include both the tangible and intangible elements of an individual. Secondly, the focus will be on estimating the impact of IHC on the firm level innovation. Thirdly, the hypothesis are framed and tested with the help of unique model. The main research question for this study is as follows:

*"Is there the contribution of IHC in the firm level innovation in UAE?"*

## LITERATURE REVIEW

### The theoretical framework

*Innovation and Innovative Human Capital*

The United Arab Emirates (UAE) is a rapidly transforming nation from an oil based economy to the knowledge based economy. Now the knowledge-based economy is one of the important parts of the overall GDP of the nation. By moving towards knowledge-based economy from oil based economy, UAE is positioning itself as a key player along with diversifying its economy

(Byat & Sultan, 2014). The three pillars of UAE's innovation ecosystem include the financial capital, human capital and the technological capital. The country is working constantly to promote innovation in the country (Byat & Sultan, 2014).

Innovation is one of the crucial aspects of the developed economies as it has a direct relation with the growth of the nation (Kuhlmann, 2001; Simonen & McCann, 2008). Innovation can be described as the "growth engine". For innovation, organizations are dependent on the different sources of knowledge. Organizations need to exploit both internal and external knowledge for innovation (Cohen & Levinthal, 1990).

The leadership of the UAE is aspiring to create an economy that is knowledge based and is also fuelled by innovation. This is also evident in the UAE's vision of 2021. The UAE's 2021 vision focuses on building an innovative and knowledgeable nation. Significant investments have been made in the area of capacity development and education along with setting the foundation for the long term competitiveness (Byat & Sultan, 2014).

**Innovative Human Capital**

Human capital is essential for all the innovation and changes that take place in an economy. Some of the necessary conditions for bringing potential innovation include a highly skilled and educated population so that the human capital of the nation can be advanced. UAE in this context has focused on advancing its human capital. UAE has tapped into the knowledge and experience of various developed nations. The country is also developing in terms of the education system. Human capital is the short form that is used by the researchers and economists so as to refer to the knowledge, skills and abilities (Acs & Armington, 2004).

Edquist (2011) has focused on the important activities that are included in an innovation system. The activities include the training and education. In this particular paper both the education and training have been included. These are the tangible elements of innovation. Both education and training are the important elements of innovation but they cannot capture the intangible elements (Edquist, 2011).

Human capital can be viewed from multidimensional lens and it is one of the valuable inputs for the firms. In this context four hypotheses have been framed for this study. These hypotheses capture both the intangible and tangible elements between an employee and a manger. The figure 1 presents the combination of the traditional measures and the innovative elements; education and training with the job satisfaction and willingness to change.

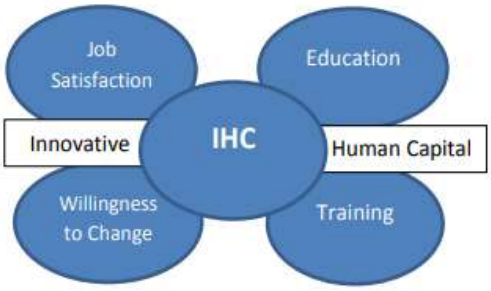


Figure 1: Elements of Human capital

**Formulating the hypotheses**

The first hypothesis is based on the measure of educational attainment of the human capital. Education is one of the major sources of human capital(Schiuma & Lerro, 2008).Education helps the people to acquire the essential skills along with identifying the business opportunities (Arvanitis & Stucki, 2012) and increases firms' absorptive capacity(Goedhuys, et al., 2013).It has been suggested that education helps in increasing the human capital of the organizations. Hence the first hypothesis is:

H1: Firms that employ managers who are higher in terms of education are more likely to innovate.

It is important for the organizations to maintain a high level of human capital. The employees who are well trained are efficient in developing new skills and abilities. The trained employees are the important part of the innovation process(Rennings & Zwick, 2004). Hence the second hypothesis for this research is:

H2: Firms that employ the managers who actively participate in the process of training are likely to innovate.

From a resource-based view, there are differences in the performances of organizations because of the differences in their capabilities and the resources. The intangible resources are more helpful than the tangible resources for gaining a competitive advantage. Job satisfaction is one such element (Judge & Kammeyer-Mueller, 2012). Hence, the hypothesis is:

H3: Firms employing managers who are satisfied in their job are more likely to innovate.

Change is another core element of innovation (Montalvo, 2006).The willingness to change is one of the intangible elements important for innovative human capital. The innovativeness of the individuals can be defined as their willingness to change. The positive attitude of managers

towards change helps in encouraging the new ways of doing the work. In other words a positive attitude towards change helps in encouraging innovation in an organization. (Wang & Ahmed, 2004). In addition, the willingness to change has significantly improved in the recent years. Hence, the hypothesis is:

H4: Firms that employ the manager who have a willingness' to change are more likely to innovate.

## RESEARCH METHODOLOGY

### Research approach

Quantitative Research approach was used in this researches from where the data set has been collected. The idea behind using this research approach is that quantitative research allows the collection of a more generalized data which ensures more reliability to the research. It also provides equal opportunities to the respondents to get selected and promises unbiased collection of data (Creswell, 2014).

### Data collection

The four hypotheses developed in the above segment will be tested for their impact on the three types of firm level innovations, i.e., process, product and service innovation. The dataset utilised for analysis includes 50 observations of the large and small sized firms handled by the UAE Government during the reference period of 2014-2015. 57 percent of the firms performed service innovations, 65 percent firms performed process innovation and 58 percent of the firms performed product innovations.

### Estimating the effect of Innovative Human Capital on Innovation

The aim of the research is to address the effect of Innovative Human Capital on three types of firm level innovations including process, product and service innovation in both large and small sizes Government affiliated firms in UAE. For this, the estimation of the six logit models is required. The equation that has been derived using these models is-

$$Inn_i = \alpha_{0i} + \alpha_1 Z_i + \alpha_2 Dem_i + \alpha_3 RS_i + \alpha_4 IHC_i + \varepsilon_i$$

Where,

$Inn_i$ = measure of the innovation activity in the firm

**Z** = firm specific variable which is a vector of the firm specific attributes which are expected to affect the capacity of the firm to innovate.

$Dem_i$ = depicts the gender, age and nationality of the managers of the firm (demographic factors)

**$RS_i$**= location of the firm which controls the external factors which affect the innovation in the firm.

**$IHC_i$** = estimation of the Innovative Human Capital

**Data analysis approach**

The IHC is the main variable in the analysis. The IHC is composed of four elements namely training, education, job satisfaction and willingness to change. The questions related to the variables willingness to change and job satisfactions are measured using the 7 point Likert scale. The reliability of the values of these variables was checked using Cronbach's alpha coefficient. The value of Cronbach's alpha coefficient for job satisfaction was found to be 0.74 and for willingness to change, it was found to be 0.71. The analysis of the data will be done through multiple logit regression.

**FINDINGS**

The average age of the managers in these firms was 41 years and 43.5 percent managers had a third or higher level degree. 65 percent of the managers were males and rest were females. About 30 percent managers worked for finance or banking organizations, whereas 22 percent managers worked for the production firms. Only 56 percent managers received a prior training before starting to take decisions on the behalf of their company. 37 percent managers indicated that they are satisfied with their jobs. 71 percent firms, as per the information provided by the data set, provided regular reviews and appraisals to their employees, out of which 85% were large sized firms. The frequency of receiving performance or appraisal related information from the managers was measured using a 7 point Likert scale. The reliability of the collected data was checked using the Cronbach's alpha coefficient. The value of the Cronbach's Alpha coefficient was found to be 0.8. It was estimated that 89 percent of the managers of the firms motivate their employees to work in team so that a better performance can be achieved both by them as well as the firm. 91 percent managers agreed to the fact that they keep the priorities of the customers on top and design the strategies keeping it in mind.

Table 1: Summary of variables used for the estimation of the effect of IHC on firms' performance

| Variables | Dimension | Value |
|---|---|---|
| **Product innovation** | Firm's performance | 58% |
| **Service innovation** | Firm's performance | 57% |
| **Process innovation** | Firm's performance | 65% |

The multiple logit regressions using equation 1 indicate that training is positively significant at 1 percent level for process and service innovation. The willingness to change can be seen as the positively significant factor for service and product innovation. In large sized firms training is positively significant for the process and service innovation at 10 and 5 percent levels respectively. Education is positively significant for the process level innovation. The table presents the results of all the four elements on process, product and service innovation.

Table 2: Results of multiple logit regression for four elements of IHC

| Elements of IHC | Small sized firms | | | Large sized firms | | |
|---|---|---|---|---|---|---|
| | Service innovation | Product innovation | Process innovation | Service innovation | Product innovation | Process innovation |
| **Job satisfaction** | 0.033 | -0.088 | 0.207 | -0.246 | -0.141 | 0.056 |
| **Willingness to change** | 0.295 | 0.487 | 0.038 | -0.101 | 0.119 | 0.071 |
| **Training** | 0.798 | 0.282 | 0.841 | 0.328 | -0.014 | 0.547 |
| **Education** | -0.062 | -0.124 | -0.031 | 0.196 | 0.191 | 0.407 |

## DISCUSSION AND CONCLUSION

The research focuses on both the tangible (education and training) and intangible elements (job satisfaction and willingness to work) of the Innovative Human capital. These elements promote the concept of Innovative Human Capital and enhance the performance of the firm. The innovative human capital affects the performance of the firm positively (Vinding, 2006). The results indicate that formal education of the managers impacts the process innovation in the large sized firm and implying IHC innovation in this field may result into increased performance of the organization.This satisfies H1a hypothesis as the managers with a higher education degree enhance the firm's innovative capability. Better training of the managers also affects the service and process innovation positively in both the large and small sized firms which, in turn, affect the firm's performance as innovative technologies enhance the company's productivity. It satisfies the H1b hypothesis and proves it to be true and positively significant. Job satisfaction impacts the process and service innovation positively. Thus, H1c hypothesis also proves to be true. 'Willingness to change' element impacts product and service innovation in the small firms. It satisfies the H1d hypothesis and proves it to be true and positively significant. Therefore, it is necessary for the government of UAE to ensure that all these factors are followed in the firm to improve the tendency of innovation in the organization and enhance the overall performance of the firm.The government of UAE can also formulate such innovation policies which support innovation in the process, products and services of its organizations.

The major limitation of this research includes the absence of the firm level R&D as one of the major contributing factors for the studies related to the field of innovation. The lack of the longitudinal study also restricted the understanding of the relationship between IHC, innovation and firm's performance. This opens the avenue of scope for the future researchers for further research on this topic based on a time series data developed through R&D.

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