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# An Empirical Analysis of SME Innovativeness Characteristics in an Emerging Transition Economy: The Case of Uzbekistan

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**Abstract**
Any organization, be it public or private, is an independent player in the competition game and no organization is free from dangers that harsh competition brings into existence. Only the ones who are creative and innovative with what they are doing in a permanent manner can have better prospects. In such a situation, organizational innovativeness, its ability to think innovatively determines its smooth motion against harsh competition stream both from national and international markets. However, to attain conditions which would fuel the innovativeness in the organization is not an easy task. Nonetheless, knowing all the factors both external and internal that have notable impact on innovativeness of the organization creates a good view for top managers of the company and government agencies responsible for supporting national organizations to elaborate policies that further trigger positives and prevent negatives respectively. Hence, recognizing the all factors that have a positive and negative effect on innovativeness of SMEs in the developing countries context gives emerging economies a nicer look and controls over these factors to better support their national companies. Additionally, SME managers, knowing these factors, can make decisions more easily to bring the company's innovativeness to higher level. Therefore, the researchers' interest here is to check the factors that have noteworthy effect on innovativeness of SMEs in Uzbekistan; an emerging in-transition country in Middle Asia.
**Keywords:** SME, Innovativeness factors, In-Transition, Competitiveness

## 1. Introduction

Small and medium enterprises (SMEs) play an important role in the advancement of economies. They are given main attention in designing State Development Programs because of their flexibility, high employee involvement and contribution in acceleration of scientific and technical progress (Rutkauskas, 2012). In a contemporary scientific literature, many benefits of SMEs to the economy of the country are mentioned. According to Hussain (2011) sees three driving forces that condition further strengthening SMEs in developing countries:

i) SMEs are essential vehicle to solve unemployment and poverty alleviation problems;
ii) SMEs can contribute significantly to the national economy of the country;
iii) SMEs can foster entrepreneurial culture and make economy more flexible to the external fluctuations

In addition to this, SMEs contribute to income generation for the people, tax and export revenue for the country, which is consistent with their interests. In this way, country can achieve higher economic prosperity, social development and stability. SMEs' contribution to innovation has also been widely acknowledged and emphasized by both researchers and politicians.

Today the importance and necessity of innovation in every field is well understood within any economies that are implementing free market economy system and even better realized within the ones that are simultaneously integrated into globalization. Today's competitive market situation has already turned out to be "innovate or die" situation. Innovation is becoming central to creating and sustaining competitive advantage. It is not only being considered to be one of the key tools for competitive advantage but also the main factor for wealth creation. Therefore, in the current day economic scenario, innovativeness is imperative in any sphere; company or organization and the whole country. Since the potential of every single country is determined by the strength and competitiveness of its companies, appearance of bigger number of more innovative companies within the economy positively enhances the economic power of the respective country in the world. In this respect, the importance of small and medium sized enterprises increases in the light of the fact that it can involve more people into competition thus activates their ingenuity in their strive to be successful in their respective businesses. Small and medium enterprises play important role in the development of country's economy. Therefore, understanding forces that contribute to the success of small and medium enterprises is very important. Since innovativeness is among one of the most important means through which such businesses contribute to economic growth, several research studies were conducted to determine which factors positively affects SME's innovative efforts.

## 2. Innovation Concept

The term "innovation" has been interpreted and explained by many scholars and practitioners based on their own perspectives and views. Therefore, sometimes it is to some extent complicated to gather them all and to come at one stand. If we into the history, the introduction of this word in the field of economics is related to Joseph

 

Schumpeter (1934) who used the term "innovation" for the first time and described it as the motor of the development. According to the definition specified by the wikipedia.org electronic dictionary; "innovation" is a word derived from its Latin equivalent "innovatus" which means, in - "into" + novus - "new" - the introduction of something new (e-Wikipedia). Interpreting the term of "innovation" Harmut (preface note) claims that this is a substitution new-trend word in management for previously widely-used words like "re-engineering," "six sigma," "kaizen," "out-sourcing" and it embraces all their functionality (Langdon, 2011). Mulgan et., al. (2003) describe innovation as "new ideas that work" that is the creation and application of new processes, products, services which as a result brings noteworthy improvements in efficiency, effectiveness or quality as an outcome.
From different views of several theorists and also based on Oslo Manual (2005) interpretation, in a modern economy, we assert that innovation is a term to illustrate noteworthy change in product, process, organizational structure and marketing strategy of the organization that can bring better performance and higher competitiveness to the status of the organization in the market.

## 3. Methodology

This research targeted small and medium enterprises (SMEs) of Uzbekistan and intended to find out their innovativeness characteristics using survey questionnaires for data collection. A total of 150 informants were employed to respond to designed binary questions. This kind of research is for the first time carried out in Uzbekistan context. The guidance and instructions from Oslo Manual (2005) became the foundation of our research to build research methodology and in order to ascertain high respond rate in our survey and reliability in our research findings.
We chose Logistic Regression Model for our research analysis, with the premise of applying this model enables us to explain innovation behavior of Uzbekistan SMEs. The use of Logit model aids to make inference on impact of all independent variables onto the dependent variables. In order to check significance of relationship separately we considered the affecting factors and dependent variables, and applied the Bivariate Relationship Statistics. Chi-square and McFadden's $R^2$ were also applied to check significance in Logistic Model.

## 4. Findings and Discussions

### 4.1 Research Variables

Table 1 displays the dependent and independent variables used to measure the innovativeness of SME in Uzbekistan. The dependent variables are the innovation outputs as a result of the conjured independent variables which are inputs to the process of SME innovativeness. We treated innovation activities as both as dependent and independent variables. They are treated as dependent variables to measure the efforts of SME that result in those innovative activities considering that generally developing countries are still trying to implement innovation and to put it to work is still a backlog.
Table 1: Dependent and Independent Variables measures

| № | **Dependent variables** | № | **Independent variables** |
|---|---|---|---|
| | **Variable names** | | **Variable names** |
| | | | |
| | **Innovation outputs** | | **Internal factors** |
| **1.** | Innovative products (services) | **1.** | Research and Development (Internal) |
| **2.** | Products (services) with significant improvements | **2.** | Embodied technology |
| **3.** | Process innovations | **3.** | Disembodied technology |
| | | **4.** | Organizational modernization |
| | | **5.** | Design |
| | | **6.** | Marketing |
| | **Innovation activities** | | |
| **1.** | Research and Development (Internal) | **7.** | CEO Worldview (countries have been to) |
| **2.** | Embodied technology | **8.** | CEO's perception of innovation (presence of innovation strategy as an objective) |
| **3.** | Disembodied technology | **9.** | Employee engagement in innovation process (ideas from employees) |
| **4.** | Organizational modernization | **10.** | Training (for managers of the company) |
| **5.** | Design | **11.** | IT capabilities (degree of internet usage in the company) |
| **6.** | Marketing | | |
| | | | **External factors** |
| | | **12.** | Networking (relations with knowledge/technology centers) |
| | | **13.** | Government (Public) incentives |
| | | **14.** | Dominant market (Export potential) |

 

### 4.2 Statistical Model Results

In this study, we used the chi-square statistics and bivariate correlations to measure the relationship between variables. Furthermore, the correlations that were significant at P < 0.05 represented in bold in Table 2 were further used for the logistics regression.

#### 4.2.1 Chi-Square and Bivariate Relationships

The top figures in each cell represent Chi-square and bottom figures of each cell represent significance of the bivariate correlation. The significance tests for chi-square and bivariate logistic correlation are not calculated with exactly the same way, but almost give the same statistical conclusions. Chi-square and bivariate correlations represent the strength or significance of the relationship between variables. The table below shows the summary of chi-square statistics and significance of bivariate relationships.

**Table 2: Chi-square Statistics and Bivariate Correlations**

| Variables | Innovative products (services) | Products (services) with significant improvements | Process innovations | *R&D* | *Embodied technology* | *Disembodied technology* | *Organizational modernization* | *Design* | *Marketing* |
|---|---|---|---|---|---|---|---|---|---|
| R&D | 3.449[a] .063 | 1.502[a] .220 | **22.491[a] .000** | - | - | - | - | - | - |
| Embodied technology | **3.939[a] .047** | **7.999[a] .005** | 2.510[a] .113 | - | - | - | - | - | - |
| Disembodied technology | 1.824[a] .177 | **4.202[a] .040** | **5.671[a] .017** | - | - | - | - | - | - |
| Organizational modernization | .137[a] .711 | **10.369[a] .001** | **15.716[a] .000** | - | - | - | - | - | - |
| Design | **6.545[a] .011** | **7.376[a] .007** | **6.158[a] .013** | - | - | - | - | - | - |
| Marketing | **8.371[a] .004** | **14.553[a] .000** | **11.244[a] .001** | - | - | - | - | - | - |
| CEO Worldview | **13.792[a] .000** | **11.453[a] .001** | 1.500[a] .221 | .542[a] .462 | .070[a] .792 | 1.852[a] .174 | .602[a] .438 | 2.217[a] .137 | .028[a] .867 |
| CEO's perception of innovation | .582[a] .445 | **3.892[a] .049** | **21.085[a] .000** | **15.947[a] .000** | **9.383[a] .002** | **18.532[a] .000** | **13.253[a] .000** | **24.523[a] .000** | 1.564[a] .211 |
| Employee engagement in innovation process | **7.302[a] .007** | **13.844[a] .000** | .510[a] .475 | 1.410[a] .235 | .147[a] .701 | 3.020[a] .082 | .604[a] .437 | 1.457[a] .227 | .024[a] .876 |
| Training | **17.454[a] .000** | **14.236[a] .000** | .960[a] .327 | **6.802[a] .009** | **4.189[a] .041** | 1.307[a] .253 | .084[a] .772 | .001[a] .979 | **6.136[a] .013** |
| IT capabilities | **3.941[a] .047** | **18.887[a] .000** | **10.714[a] .001** | **27.050[a] .000** | **4.582[a] .032** | **16.188[a] .000** | **20.798[a] .000** | **23.439[a] .000** | **16.084[a] .000** |
| Networking | **19.652[a] .000** | **36.486[a] .000** | **27.350[a] .000** | **8.525[a] .004** | **11.063[a] .001** | .098[a] .754 | **5.060[a] .024** | 1.550[a] .213 | **4.274[a] .039** |
| Government (public) incentives | **13.842[a] .000** | **17.692[a] .000** | **13.306[a] .000** | **6.460[a] .011** | .023[a] .879 | 1.616[a] .204 | 2.966[a] .085 | .000[a] .989 | 2.929[a] .087 |

***Note:*** *Correlations shown in bold were statistically significant at* ***P < 0.05***

#### 4.2.2 Logit Modeling

Only the variables that were found to be significant at P < .05 from chi-square statistics were chosen for further analysis in a Multivariate Logistic Regression Model. Table 3 displays the Multivariate Logistic Regression results for relationships between dependent and linked independent variables to represent the facilitating factors of SME innovativeness. Nine separate Multivariate Logistic Models (only one step calculation) was calculated.

 

**Table 3: Multivariate Logistics Regression** (parameter estimator and sigma values)

| Variables | Innovative products (services) | Products (services) with significant improvements | Process innovations | Innovation Activities | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | R&D | Embodied technology | Disembodied technology | Organizational modernization | Design | Marketing |
| **R&D** | - | - | .789<br>.119 | | | | | | |
| **Embodied technology** | .223<br>.656 | -.102<br>.856 | - | | | | | | |
| **Disembodied technology** | - | .085<br>.876 | .294<br>.554 | | | | | | |
| **Organizational modernization** | - | .412<br>.435 | .539<br>.304 | | | | | | |
| **Design** | **1.260**<br>**.021** | .563<br>.340 | -.601<br>.286 | | | | | | |
| **Marketing** | .421<br>.388 | **1.315**<br>**.015** | **1.011**<br>**.057** | | | | | | |
| **CEO Worldview** | **1.632**<br>**.010** | .947<br>.193 | - | - | - | - | - | - | - |
| **CEO's perception of innovation** | - | .655<br>.287 | **2.090**<br>**.001** | **1.238**<br>**.006** | **1.154**<br>**.008** | **1.249**<br>**.002** | **.841**<br>**.042** | **1.489**<br>**.000** | - |
| **Employee engagement in innovation process** | **-1.056**<br>**.030** | **-2.878**<br>**.000** | - | - | - | - | - | - | - |
| **Training** | **.939**<br>**.055** | **1.125**<br>**.055** | - | **1.151**<br>**.010** | .698<br>.083 | - | - | - | **.863**<br>**.019** |
| **IT capabilities** | -.983<br>.086 | 1.122<br>.060 | -.653<br>.218 | **1.644**<br>**.000** | .249<br>.564 | **1.010**<br>**.010** | **1.608**<br>**.000** | **1.265**<br>**.001** | **1.369**<br>**.000** |
| **Networking** | **1.604**<br>**.001** | **2.259**<br>**.000** | **1.792**<br>**.000** | .344<br>.429 | **.942**<br>**.022** | - | .146<br>.725 | - | .180<br>.637 |
| **Government (public) incentives** | .519<br>.328 | .281<br>.634 | .485<br>.309 | -.267<br>.573 | - | - | - | - | - |

There are three main dimensions of innovation measured in this research, namely innovative products/services, products/services with significant improvements and process innovation. Innovation activities shown in table 3 are also considered measures due to status quo of developing nations in implementation of innovation which is still proving challenging; therefore the specified innovation activities above are deliberately treated as innovation outputs in order to trace the milestones in firms' efforts to embrace and integrate innovation in their business operations.

Innovative products/services

It has been found that the outputs of innovative products/services are a result of work done in the designing department. The product design cues range from the outside appearance to internal/hidden cues that improve product performance which together amounts into an innovative product. The CEO's worldview significantly push ideas from thinking global to produce innovative products that are at par or unique from the leading innovators out there and tapping new markets. Employee engagement in innovation process and training significantly contribute to the produce of innovative products/services. The employees apply the important resources which are intangible assets such as knowledge and ideas to produce innovative products and services. It is quite important to note that resourceful management and utilization of intangible assets are pivotal to innovativeness and progress of SMEs in Uzbekistan. Though the results show negative proportion on engagement of employees in innovative activities is still vital for innovation undertakings, this is because firms are still emerging up for employees to embed innovation into the whole system. Networking is relevant contributor to output of innovative products and services. Networking is a socioeconomic business activity by which groups of like-minded businesspeople recognize, create, or act upon business opportunities (e-Wikipedia). Prominent business networking can opportune organizations to create models of business networking activity that allow the business person to build new business relationships and generate business opportunities at the same time

Significant improvements in products/services

A significant improvement in products and services was found to be positively influenced by marketing efforts, the employee engagement in innovation process, and offering training to employees and networking are cores to

 

the enhancement of products. Marketing and networking are information-rich channels about stakeholders such as current markets and potentials (consumers and suppliers), and the industry's attractiveness that open pass ways for innovation.

Process innovation

Process innovation is effected by marketing efforts of the firm, the CEO's perception of innovation to align and engage employees to direct the resources economically towards the realization of innovation outputs. Networking also impacts the innovation process in favorable manner.

Innovation Activities

R&D was found to be significantly dependent on the CEO's perception of innovation, training and firm's IT capabilities. The CEO sanctions necessary research about new technology and then conducts the development of the products. The accessibility of internet to every employee is source to research the market needs, new technologies and consequently developing products/services to meet and exceed the needs of customers innovatively.

Embodied technology is influenced by the CEO's perception of innovation and networking in acquiring new knowledge and technologies to help advance the produce and operations of the firm.

For disembodied technology and organizational modernization is found that the significant predictors are the CEO's perception of innovation and IT capabilities as from technology transfers (patents, brands, industrial secrets, etc.), software for production or administrative use. Organizational modernization is achieved by strategic planning, total quality, benchmarking, etc., the production process modernization (just-in-time, changes in the physical organization of the plant), and total quality/environment management systems mold the organization to modernize through its IT capabilities, and knowledge and perceptions of the leaders.

Design in the form of product, industrial and engineering processes are positively impacted by the CEO's perception of innovation and to direct those involved to work on the objectives and the capabilities to use the IT related solutions.

Marketing is one of very important innovation characteristics that convert the ownership of products and services to consumers in exchange of cash, information and knowledge between the seller and buyer. Training and strong IT capabilities are found to be strong influencer of marketing activities which are essential for both innovation and survival of the organization.

## 5. Importance of SMEs in Uzbekistan

Importance of SMEs to the overall development of the country makes SMEs become the main business type in Uzbekistan as well. Its share in GDP has reached 54 percent in 2011 (www.cer.uz, 2012). To state SME's crucial role in Uzbekistan economy, President of the country points five important features of SME formation efforts in the country. SMEs (1) are the main source of providing the domestic market with essential goods and services; (2) are more flexible and quick in adapting changes in the demand and the situation in the global and regional markets (3) do not require large expenses and capital investments to start and run thus easier and faster for modernization, technical and technological re-equipment (4) are highly sustainability for the challenges and consequences of the global financial and economic crisis (5) are a tool for discovering the creative and intellectual abilities of people (Karimov, 2012). With a viewpoint of American Chamber of Commerce in Uzbekistan (2011), development of SMEs is seen as a great contributor for further economic progress of the country economy within three specificity adherent to situation in Uzbekistan. As the first particularity it emphasizes people of the country as born entrepreneurs. Population growth and its more settlement in rural areas are pointed as the second and third peculiarities accordingly and creating conditions for people to start their businesses in a form of SME is seen the most effective solution for problems that may arise concerning population growth and its coherent attempt to provide its livelihood.

Due to the discussed importance of SMEs in Uzbekistan, the policy makers designed the national innovation policy to serve as a framework that supports activities of innovation at all levels. Uzbekistan government has recently acknowledged the need for revitalizing the innovative activity as the main driver of sustainable growth and declared the development of innovative know-how and science as a key government priority (Kuchkarov, 2011). The attention given to innovation-based development of the country started to be addressed in a greater importance after the President's decree of the Republic №PD-436 dated August 7, 2006 "On measures to improve coordination and management of science and technology development" and №PD-916 dated July 15, 2008 "On additional measures to stimulate innovation projects and technology implementation into production". These two decrees have been followed by appropriate Decrees of the Cabinet of Ministers; "On measures to strengthen the material-technical base of scientific, R&D institutions and organizations" №241 (10.10.2008), "On improvement of the State Unitary Enterprise Technology Transfer Agency" №228 (15.10. 2008) and "On measures to further optimization and improvement of activities of Academy of Sciences" №33 (07.02.2012). From these subsequent Decrees by the government of Uzbekistan within recent years we can clearly realize country's further stronger stance towards building its economy on innovation and knowledge base.

 

## 6. Conclusions

Understanding the indispensable role of innovations in the prosperity of societies, one needs to recognize the facilitating factors of SME innovativeness to implement and sustain innovation. The factors disclosed in this study as enablers of innovation in Uzbekistan will be of crucial importance for SMEs to focus on innovative activities and factors that are vital for their sustainable innovativeness. Managers can capitalize on these identified factors to build an enterprise's competitive edge in today's undeniable fierce global market not only for the enterprise's benefit but for the welfare of the nation as a whole.

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