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Linking Trends of Executive Opinions on Innovation-Driven Ideas to Company Growth

MA Kafaji¹

¹College of Business, Alfaisal University, Riyadh, Saudi Arabia, PO Box 50927, Riyadh 11533, Kingdom of Saudi Arabia. Email: mkaafaji@alfaisal.edu

ABSTRACT

This research aims to evaluate the opinions of executive management on the roles played by innovative ideas to support business growth. From the executive opinions perspective, the gathered data was classified into two categories: 'attitude towards project-based innovative ideas' and 'attitude towards operation-based innovative ideas'. These opinions were tracked over three years to evaluate the trends of changes. A total of 189 Chief Executive Officers (CEO's) from different companies in different industries were interviewed over three consecutive years. The data sets were analyzed using nonparametric Kruskal-Wallis H-Test to compare the responses of different groups in different years using standardized SPSS statistical package. The results indicate that the companies' attitudes towards failed project-based innovative ideas don't change with time while the perceived impact of operation-based innovative ideas undergo noticeable change with time. Furthermore, the results also indicate that the executive management underestimates the business value gained from the failed project-based innovations compared with the growth added value gained from the operation-based innovations. The change was further quantified using the post hoc Mann-Whitney U-test to compare data sets gathered in three consecutive years. The results showed that the perceived impact of innovative ideas (through both projects and operations based initiatives) on the companies' growth is declining with time, i.e. companies think that innovative ideas seems to play diminishing roles in supporting the overall company's growth in last three years. These findings were discussed and analyzed within the contents of socioeconomic and cultural contexts.

Keywords: Project-based innovations, operation-based innovations, Company growth.

1. INTRODUCTION

A key characteristics of modern business management is the continuous need for organizational innovation to achieve competitive advantage that differentiate a business from other competitors (Danneels and

Kleinschmidt2001, Madrid-Guijarro et. al., 2009). This innovations can take different shapes and forms but with a common goal to improve how an organization operates as an integrated system. For example, the degree of innovation in an organization can be expresses in terms of its ability to adopt a new idea, new technology, or new behavior that integrate within its operations to support business strategic objectives (see for example, Damanpour and Evan 1984, Alange et. al., 1998).In this prospect, a key driver for such innovative endeavor is the firm's ability to develop unique innovative approach to support business operations and growth, such as achievement of competitive advantage. This driver is further manifested by modern globalization trends that exert additional pressure on companies to explore new ideas and channels to reach diverse customer segments in wider markets. In additional to external and environmental factors, a key perspective of achieving and sustaining competitive advantage are business internal factors, such as, organizational structure, business culture, and process-related factors in managing business operations (Liner et. al., 2011). These internal factors play important role on deciding whether a company can adopt a project-based or operation-based approache to develop and implement innovative business growth ideas. In the context of this study, the project-based is considered as an approach that primarily focuses on developing new innovative ideas using a set of creative features and services to target the needs of specific emerging market segments (Blindenbach-Driessen and Van den Ende, 2006). This may or may not include introduction of organizational change to replace and support adopted organizational structure (Martinsuoel. 2006) that accompany the change. The operation-based innovative ideas, on the other hand, are those projects derived from customary day-to-day business operations and directed to meet specific customer needs, but in most cases are used to enhance and support current organizational structure and operations. These two approaches, are further discussed below. The third key concept of this study is how to relate the adoption of project-based and operation-based innovations to the macro-level business growth. In this context, the business growth refers to the company's efforts to increase business returns on investment while lowering operational overhead.

Project management discipline classify project-based organizations (known as PBO) are those using projects as an effective operational model for managing innovations and competitiveness (Gann and Salter 200, Hobday2000). In practice, within the context of business operations, an organization don't have to fully switch to a project-based structure, but rather may opt to operate as a hybrid between pure project-based and fully operational-based structures (see for example Meredith 2012).The extent of selecting appropriate position between these two extremes (projectized vs. operational) will largely depends, among other factors, on the organizational structure, maturity of cross-functional collaboration, and the level of expertise and resource availability. More specifically, in project-based organizations each project has a dedicated project manager with high authority, decision making empowerment, and reports directly to high level of executive management. Therefore workers for different projects are grouped depending on the project type, assignments, and the required skills, i.e. they don't belong to specific former department. On the other hand, due to highly competitive business needs and globalization constraints, the markets demands for new products is constantly high, the complexity of products increasing, and the products life cycles are constantly shortened. These constraints enhance each other to exert high pressure on organizations to become innovative in managing their products and services. One approach to achieve this target is the adoption of project-based organization for growth. Such an adoption can be markedly seen in organizations such as consultancy, constructions, films industry, and software engineering. In current study, a business growth based in such an approach is termed as 'Project-Based Growth', where organizations base their

strategy in achieving targeted business growth by performing specially designed projects (Gann and Salter 2000).

Since adoption of pure project-based approach to achieve business competitiveness and growth is highly expensive to setup and maintain (Meredith 2012), many organizations seek alternative approach to reduce cost yet achieve acceptable levels of the set business growth targets. One solution for companies to adopt operation-based approach instead of project-based approach, to manage their innovative ideas. Such an approach is also known as functional organization or functional silos, because the projects are entirely managed using resources within the formal functional departments. In such an approach, the projects still have dedicated project managers, but with less authority due to sharing the decision making empowerment with the head of department. The degree of empowerment can range from pure functional (with minimal authority to the project manager), weak matrix, balanced matrix, and strong matrix (Meredith 2012). In the latter, the project manager has a higher level of authority than the head of department, but less than that allocated to the project manager in the pure project based organization. In the functional approach, the growth of the organization is operations based, i.e. each department will compete against other departments on the available resources to achieve targeted 'departmental' growth. For this reason, this study names such an approach as 'Operation-Based Growth'.

This research attempts to assess the opinions of the executive management of companies from different sectors on the importance of 'project and operation based innovative ideas' for the company to grow. The research further study how these opinions change with time over a period of three years. The same set of questions were used to gather data in three consecutive years, analyze it, and the results are discussed within the contexts of cultural, economic, social, and operational perspectives.

2. RESEARCH METHODOLOGY AND APPROACH

2.1. Analysis Model

The following variables were used to gather and analyze the data of this study:

First independent variable (IV1):

- Label: Operation_Based_Growth
- Business aspect to be measured: the attitudes of executive management on added values to the company growth due to operation-based innovative ideas.
- Description: this variable aims to evaluate the opinion of company's executive management in assessing the contribution of new innovative ideas, based on business operations, to contribute to the overall company growth. It is measured on a 7-point Likert scale with [1] representing 'no added value' and [7] representing 'companies with innovative ideas are the fastest growing'.

Second independent variable (IV2):

- Label: Project_Based_Growth
- Business aspect to be measured: the attitudes of executive management on added values to the company growth due to project-based innovative ideas.

- Description: this variable is used to evaluate the attitude of the company’s executive management towards failed business projects that initially proposed to introduce new ideas to support company growth. These attitudes are measured on a 7-point Likert scale with [1] representing ‘failed projects is an embarrassment’, and [7] representing ‘failed projects is a valuable learning experience’.

Dependent variable (DV):

- Label: Year
- Description: to evaluate the trend on how executive management opinions (captured via variables IV1 and IV2) is changing with time over a period of three years. For this study, the years 2012, 2013, and 2014 were used.

Since the data is gathered from three different samples over three years and to simplify processing, the data is categorized into two groups: A and B. Group A gather responses for IV1 (operations-based) from sets 1, 2, and 3 in years 2012, 2013, and 2014 respectively, while Group B gather responses for IV2 (project-based) from same sets and years. In this way, the model assumes no relationship between the sets within one group but the sets are cross-related across between the groups because the same respondents answered the two independent variables. This arrangements are presented schematically in Figure 33.1. For example, set_1 in both groups represents gathered data from the same respondents in year 2012 for the two different variables (IV1 & IV2), and the same applies to Set_2 and Set_3. Therefore, the Set_1’s across the two groups are related with each other, but are unrelated to the respondents used to gather data for the sets in years 2013 (set_2) and 2014 (set_3). Clarifying these relationships is important to determine appropriate statistical approach to analyze the gathered data.

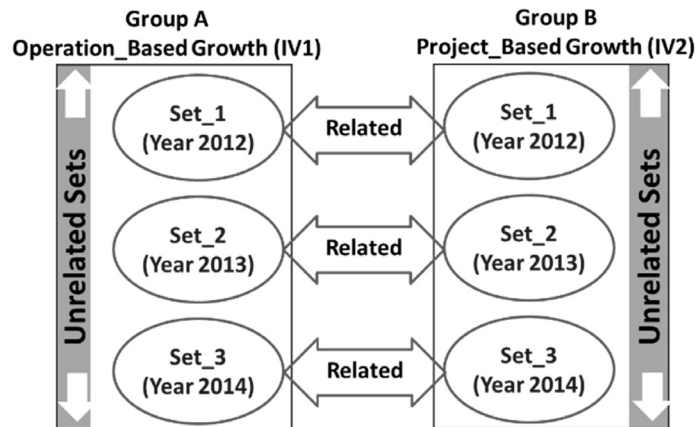


Figure 33.1: Relationship of the selected data sets within and across the selected groups over three years

2.2. Population and Samples

All participants of this study were selected from top five executive levels in different companies, i.e. CEO’s, CFOs, or heads of divisions. Various sectors were specifically selected to reach diversity in the gathered data and were gathered from companies in three major cities across Saudi Arabia.

2.3. Results and Analysis

In order to decide on statistically appropriate approach to analyze the data, specific characteristics of the gathered data must be first assessed. A key evaluation step in this process is to evaluate the normality of

the data through determination of data symmetry by assessing the degree at which the data is skewed. To perform this test, the null hypothesis assumes the data is normally distributed and if the statistical results of the test found to be significant (i.e. with p -value less than 0.05), then this null hypothesis is rejected and we conclude that the data is non-normally distributed. For this purpose, the Shapiro-Wilk approach was used (Hair et. al., 2010). The SPSS statistical output showed that the data groups for both independent variables have statistical significance of less than 0.001, which means rejecting the null hypothesis and these data distributions are non-normal. Therefore, the non-parametric Kruskal-Wallis approach was selected to analyze the data related to variables IV1 & IV2. It is used to test the corresponding hypotheses because, unlike one-Way Analysis of Variance (ANOVA) tests, it does not assume normal distribution of the data nor homogeneity of variance of all analyzed groups (Siegel and Castellan 1988, Cooksey 2007). For the purpose of this research Kruskal-Wallis approach is therefore can determine if the gathered responses of the associated data groups are different in different years, and if yes, which group is different and to what extent. Furthermore, the usage of Kruskal-Wallis approach assumes the data distributions in different groups are similar, which is tested by inspecting the skewness of all groups and found to be all negative and roughly similar. Since the assumptions for usage of Kruskal-Wallis are satisfied, the next step is to complete the research hypothesis, which are listed below. Note that the subscripts '0' and 'a' represent the null and alternative hypothesis respectively, while the superscripts '1' and '2' represent the IV1 and IV2 respectively.

The Null Hypotheses:

- H_0^1 : the executive management has no preferences to systematically rate the operation-based innovative ideas as added value for the company growth.
- H_0^2 : the executive management has no preferences to systematically rate project-based innovative ideas as valuable learning experience to support the company growth.

The alternative hypotheses:

- H_a^1 : the executive management systematically rate the operation-based innovative ideas as added value for the company growth.
- H_a^2 : the executive management systematically rate project-based innovative ideas as valuable learning experience to support the company growth.

The Kruskal-Wallis test is used analyze the data gathered in the three sets of group A for the independent variable operation-based growth (IV1; the operation-based growth). This variable captures the executive management responses on the role of operational-based innovative ideas on the company's growth. The statistical significance of these tests was found to be 0.002 which is well below the alpha error decision criterion of 0.05. The chi square (χ^2) value for a degree of freedom = 2 is 12.95, while the mean ranks are 114.26 for Year 2012, 89.17 for Year 2013, and 81.56 for Year 2014. The critical value required to reject the null hypothesis for alpha = 0.05 and degree of freedom = 2, is 5.76 (Corder and Foreman2009), and since the observed χ^2 value is higher that this critical value, then required conditions to reject the null hypothesis H_0^1 were satisfied. Note that Kruskal-Wallis approach is a rank-based nonparametric test, thus the results were presented in mean ranks. Therefore it was concluded that the assessed sets are statistically different, and that executive management opinions on operation-based growth related ideas seem to change over the three years. The Kruskal-Wallis approach was repeated to analyze the data related to the

executive management attitudes towards failed project-based innovative ideas (IV2; the projects-based growth). The results were statistically not significant ($p = 0.58$) compared with the alpha decision criterion of $p = 0.05$. Therefore, the null hypothesis H_0^2 is not rejected and the responses in the three groups can be considered to be similar to each other with $\chi^2(2) = 1.08$ and mean ranks of 100.7 for Year 2012, 91.97 for Year 2013, and 92.30 for Year 2014. Thus over the last three years, there are no significant differences between the attitudes of the executive management with respect to their perceived gained business values (in terms of business growth) from failed projects-based innovatives. It is important to note that Kruskal-Wallis tests don't give further information on the extent the groups are statically different from each other at a statistically significant level. This is evaluated quantitatively using another set of tests known as post hoc tests, which will be discussed later.

To proceed to the next step, the data analyze was progressed to compare the two sets in both groups (A and B) using medians and means to visualize the differences and trends across the three selected years and the results are shown in Table 33.1 with basic descriptive statistics. The correlations between the corresponding sets of groups A and B was estimated using Pearson correlation coefficients as shown in Table 33.2.

Table 33.1

Basic descriptive statistics of responses for relevant survey questions IV1 and IV2. The responses to each variables are gathered in three different sets in three consecutive years (2012, 2013, and 2014)

Variables	Variable Names	Sets	Years	N	Median	Std. Dev.	Std. Error Mean	Mean	Min	Max
IV1	Operation_Based Growth	Set_1	2012	63	6	1.50	0.19	5.41	5.04	5.79
		Set_2	2013	63	5	1.29	0.16	4.90	4.58	5.23
		Set_3	2014	63	5	1.49	0.19	4.62	4.24	4.99
IV2	Project_Based Growth	Set_1	2012	63	4	1.65	0.21	4.05	3.63	4.46
		Set_2	2013	63	4	1.39	0.18	3.89	3.54	4.24
		Set_3	2014	63	4	1.90	0.24	3.81	3.33	4.29

*N represents number of respondents in each sample.

Table 33.2

Pearson Correlation Coefficients between the data from three sets in res

		Operation_Based_Growth		
		Group A		
		2012	2013	2014
Project_Based_Growth	Group B	2012	0.533**	
	2013		0.523**	
	2014			0.620**

** indicate the correlation is significant at the 0.01 level (2-tailed)

The correlations between sets of the two groups are apparent in Table 33.2, indicating that executive managements relate their views on the impact of operation-based innovations (IV1) on their business growth with their views on the business values gained from the project-based innovations (IV2). This result together with the data from Table 33.1 are used to draw the relationships between the trends in executive management opinions over the three selected years using the mean score of the relevant questions. The results are shown in Figure 33.2.

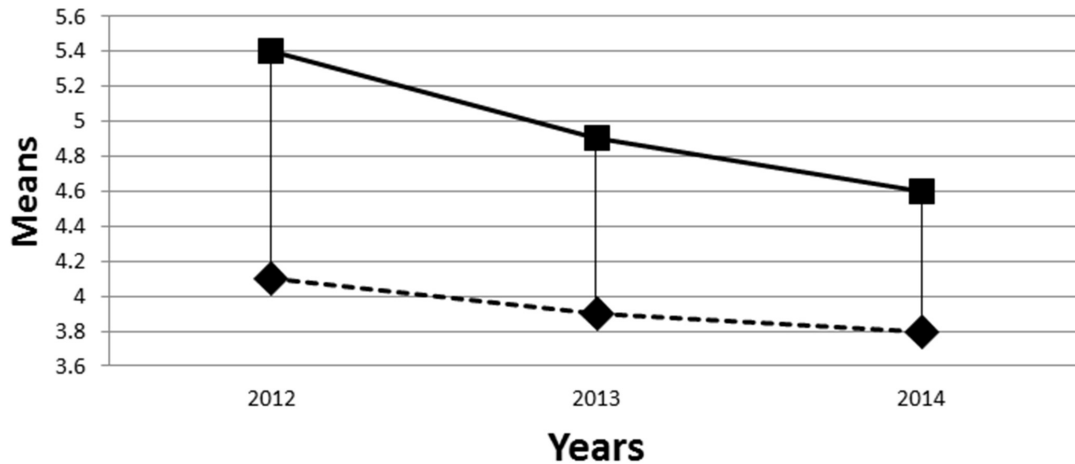


Figure 33.2: Comparison of the change in the means of the responses to the survey questions from groups A and B (see Figure 33.1). The squares (■) is for IV1 that represents respondents from ‘Group A: operation-based growth’ while the diamonds(◆) is for IV2 that represents responses from ‘Group B: project-based growth’

Figure 33.2 shows that the responses gathered from executive management on the independent variables ‘project-based growth’ and ‘operation-based growth’ are correlated and follow similar trends; this is consistent with the calculated Pearson correlation coefficients listed in Table 33.2. In other words, the executive management exhibit diminishing ‘appreciation’ (with time as year increases from 2012 to 2014) of the role played by both project-based and operation-based innovative ideas on the growth of their companies. It worth pointing that due to the similar relative skewness of the distributions of all sets, both medians and means yield similar trends presented in Figure 33.2. Despite the observed similarity in trends, overall the relative changes in the executive opinions on the value added to the company growth from operation-based innovations is higher (steeper slop) compared to that from project-based innovations. Furthermore, the average executive management opinions seem to be higher for the operation-based growth compared with the average opinions for the project-based growth. In other words, the graph markedly shows that overall the company’s executive management gives higher attention to the role played by operation-based innovative ideas compared with their appreciation of project-based innovative ideas to implement new business initiatives.

Although Kruskal-Wallis tests indicated that the data sets within Group A are different, but it does not quantify this difference, i.e. the extent and direction of the relative differences. Therefore another analysis technique is required to quantify these differences. Since the data sets within each group are independent, i.e. data in one set cannot be related to data in the other two sets in same group, then the nonparametric Mann-Whitney U-tests is applied on each pair of sets within both Group A and Group B to determine the differences between the three sets (Corder and Foreman 2009). For group A, the executive management

attitudes towards the impact of operation-based innovative ideas on company growth were changed over the three years, as shown in Figure 33.2. The Mann-Whitney U-tests revealed the values of 'U = 1429, $\bar{z} = -2.790$, and $p = 0.005$ ' and 'U = 1327, $\bar{z} = -3.300$, and $p = 0.001$ ' for comparing Set_1 & Set_2 and Set_1 & Set_3 respectively. This finding indicate that the perceived benefits of operation-based innovative ideas on the company growth, as seen by the executive management, is declining with time. However, the data also showed that executive management opinions didn't change between 2013 and 2014 with U = 1796, $\bar{z} = -0.942$, and $p = 0.346$. The same tests were repeated for Group B, the Mann-Whitney U-tests showed p -vales of 0.302, 0.443, 0.940 for comparing Set_1 & Set_2, Set_1 & Set_3, and Set_2 & Set_3 respectively. This indicate that there is no significant difference between the responses of executives managers on the impact of project-based innovations on their company growth. In other words, the executive managements maintained a neutral views on the perceived benefits from project-based innovative ideas for the years 2012, 2013, and 2014.

3. DISCUSSIONS AND CONCLUSIONS

Overall, the analysis of the gathered data showed two main results: First, the executive management seems to rate the relationship between company's growth and operation-based innovations at a higher value compared with their perceived benefits from project-based innovations that adopt new radical business ideas. Second: for both variables (IV1 and IV2), the level of executive management opinions on business growth seem to diminish over time, with a steeper negative slop (higher relative changes) for the relationship that links the company's growth to the operation-based innovations.

As stated earlier, the operation-based innovations are normally translated to customer focused projects to support and integrate various business aspects to deliver products and services aligned with the customer needs and expectations (Hopday, 2000, Prencipe et. al., 2003). In this respect, executive managers with higher focus on customer needs have higher appreciation of the roles played by the operation-based projects in supporting business growth and achieving strategic business objectives. In other words, the company would focus on improving its current operational practices through incremental innovation approach (Tidd and Bessant 2009). This objective is the driver for many originations to integrate their operations both horizontally and vertically to improve innovations through reduction of innovation barriers with substantial efforts spent to identify and reduce these barriers (Prest and Sopher 2014, Kotey and Sorensen 2014). This situation, based on the results above, seem to be the dominant model adopted by senior management and consistent with earlier studies, indicating that disruptive innovations constitute smaller fraction of the organizational innovation (Tidd and Bessant 2009). Therefore, globalization and shift to customer and service oriented markets seems to positively impact the local companies to orient their services and innovations towards meeting consumer expectations.

Another potential explanation of the first result can be driven from analysis of manpower constraints in local markets. A crucially important success factor for project-based innovations are availability of team expertise with high commitment and practiced leadership (Blindenbach-Driessen and van den Ende 2006, Weiss et. al., 2011). In the middle-east, the businesses are somewhat dependent on foreign expatriates that mainly occupy middle-senior positions (Al-Rajhi et. al., 2006) and play important roles in deciding and implementing long-term business strategies. There are many factors that impact the performance and commitment of these employees, such as globalization, organizational culture, organizational justice, and

organizational climate (Ibrahim and Perez 2014). Combining these factors with socioeconomic constraints can result in short-term commitment by both businesses and workers, which in turn discourages long-term planning that may influence a company's strategic adoption of an innovation model. One outcome of such influences is dedicating less priority to radical innovative projects, instead the executive management dedicates more efforts to increase their share of the market through focusing on short-term customer needs rather than investing in developing long-term radical project-based innovations.

The study indicates a declining trend of operation-based innovation over time, i.e. companies seem to give less attention to improving their business operations through innovations over the last three years. Few factors may contribute to this observation; such as increased operational costs, strong local competitions, globalization, short product lifecycle, restrictive mindset, insufficient resources, and organizational structures. These factors were the center of much study individually or collectively, examples of studies include: Weiss et al., 2011, Sheffer 2011, Kotey and Sorensen 2014, Story et al., 2014. It is not clear at this stage as to which of these barriers play a driving role to explain the declining trends on operation-based innovation in the last three years, however this could trigger future additional work.

In conclusion, the presented work shows strong correlations between executive opinions on the gained business value from operation-based and from project-based innovations. While both seem to decline with time, the executive management seems to value operation-based innovation more. Although key results are consistent with previous studies, the explanations are still challenging and the results of current work are discussed in terms of local socioeconomic and demographic constraints.

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