

Innovation and Organizational Cost Saving: A Case from Malaysian Innovation Project

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Abstract

This study investigates the relationship between innovation and the cost saving per year of the corporation and the governmental sectors. Consideration amount of the cost saving per year by sectors that involved in this study is also accounted as to support the relationship between variables. This study uses the secondary data obtained from Malaysia Productivity Corporation (MPC). The predictor and the outcome of the model will explain whether the relationship with both variables does exist. The data consist of innovation project that conducted by the taskforce in the business organization and non-business organization which previously in the manufacturing sector (MS), servicing sector (SS) and the public sector (PS). The data gathered is in a form of qualitative and quantitative which is needed to be justified first before it simply can be analyzed. The data are analyzed by using SPSS 21. Analysis of variance (ANNOVA) is used to determine the variance between different groups and the Pearson Correlation to determine the relationship between variables.

Keywords: innovation; organizational cost saving; manufacturing sector; service sector; public sector; Malaysia Productivity Corporation;

1. Introduction

Innovation is one of a kind methods that be used by organization either profit oriented or non-profit oriented to stimulate synergy in their product, process of operation or doing thing in the organization, managerial, marketing and other component in entire organization as well. It is not a new discipline and had been work in 1980s and 1990s (Tucker, 2001), and it is a consistent feature of the private sector for a number of years (Akenroye, 2012). According to Considine et al. (2012), public service innovation is a tool to keep the workforce and workplace productivity initiatives become more efficient. It serves as a key goal and direction for the employee that hired by the public sector. While in a private sector even small, medium or large corporation relying heavily to innovation in order to prolong the business, remain in the tight market, competing strongly and fairly and also to expand the market particularly.

In the manufacturing sector (MS), service sector (SS) and public sector (PS), this tool of innovation is widely used for better performance, elasticity of demand to the company product and services, and to focus on the competitive value in the business environment. Sørensen and Torfing (2012) had cited that innovation assisting much to the corporation in cost saving, product improvement and the most important element is markets extension. In many industries, innovation definitely seen as a method of reducing the operation outlay, costs of production, delay time, downtime, waiting time, wastes, other frail process and product accordingly.

This study is conducted by using the secondary data obtained from the Malaysia Productivity Corporation (MPC). The data shows the brief detail of the company and the government agency, and also other information which regarding to the organization activities in the innovation. The secondary data is used where it provides the thorough information and other relevant fundamental facts that can be applied in this study. Other reason of secondary data is be used due to it clearly stated the homogeneous of every single firm and governmental agency. The objectives of the study are to investigate the relationship between innovation and the cost saving, and to identify the cost saving per year by every sector.

2. Research Question

Innovation product can resulted from the research and development, innovation project conducted by the organization,

contested event project innovation and other sources. Many business firms choose an innovation as a part of their strategy in improving their product and service offered in the market. Product, process, organizational or marketing innovation is deliberately applied by the organization in local or international application. Great products resulting from great innovation and in the business great innovations will be benefits for both company and customers as well (Sato, 2009). In Malaysia, the government has had introducing a lot of method that will support any activities, program and event that regard with the innovation. In the financial support, the facilities such as Malaysian Venture Capital Management Berhad (MAVCAP), MSC Malaysia, R&D Grant Scheme (MGS), Commercialization of Research & Development Fund (CRDF), Enterprise Innovation Fund (EIF), Techno Fund and many other funds introduced as an assistant to the entrepreneur to commercialize their innovation product, service, and other matter related to the innovation. In additional to the financial support and assistance, the Department of Public Servant Malaysia (*Jabatan Perkhidmatan Awam*-JPA) come out with initiatives to encourage the government department and government subsidiary company by introducing the innovation competition. One of the Malaysian-invention competition that most popular participating by corporation and government agency is KIK (*Kumpulan Inovasi & Kreativiti*) that created through government regulation through JPA circular. The relevant innovative knowledge is developed by a group of experts who collaborating closely (Aalbers & Dolfmsa, 2014). Smet (2012) studied the regulation that influencing the innovation process, and there is clear evidence that the regulation able to stimulate the innovation process in the organization.

According to Buerkler (2013), human skill and financial resources is a complementary resource for any research and development, and innovation. Personnel skill is not suffice in delivering the innovation task without complementary support of financial resources and vice versa. Almost corporation and government agency in Malaysia who participates in the innovation competition will using organization resources either the time in form of working hours, money, and facilities. This situation lead to the time consumption and financial expenditure especially when the process of innovation begun. There is a probability that innovation is able to reduce cost in operation. It will minimize waste and at the same time will increase the effectiveness of the process and the product quality and productivity of the firms. In other words, innovation will optimize the productivity of the corporation and enhancing the competitiveness of the organization.

Mulgan and Albury (2003) did mentioned that there are the barriers to innovation in organization such as reluctance to close down failing programmes, a culture of risk aversion, over-reliance on high performers as a source of innovation, delivery pressures and administrative burdens, cultural reluctance to integrate new technologies, lack of rewards and incentives for innovation, short term budget and strategic outlook, and lastly is a poor skills in active risk or change management. In general view of innovation, is that worth enough to any organization to involve in the innovation and applied the result of the innovation to their daily operation? This question is raised due to the innovation is costly and the time consumption is lengthy, so many uncertainties, the innovativeness and newness of innovation projects towards the firm capabilities remain unexplored (Tepic et al., 2013). Furthermore, some of the innovation projects fail in conjunction with the profit targets (Cooper & Edgett, 2009). Kapoor et al. (2014) found that from total 28 attributes, only 17 attributes including cost recovery and continuing cost had not been used as innovation attributes in any of the 129 publications. The specific question is, are there any relationship between the cost saving and the process of innovation? Is there any relationship between each variable? What is the total cost of saving yearly by the organization who applied the innovation? Thus, this study will investigate the research questions accordingly.

3. Literature Review

3.1 Three major sectors

The distinction between MS, SS and PS is indicated by the owner of the organization, the purpose of establishment of every organization whether profit oriented or non-profit oriented, or for the sake of public. MS involve with activities of merchandise production using machinery as the tools, employed people as the labor and there is a systematic process in the daily operation. It is either privately owned by an entrepreneur or governmental subsidiary which is own by public through shareholder. The main purpose of MS is for profit and will targeting their customer and generally operating in the market segments. SS in other hand will rely to the only intangible products. It is subjectively judged by the level of satisfaction, perception and other emotional effect of the people. In this sector, machinery is generally used as to support the services provided by the firm. The prime mover of this sector is human being or the people hired by the service firms. Whether it is privately owned or publicly owned, the purpose is to provide servicing to the public and strategic segment of the public as well. The firm in the SS category can be divided in two levels. First level is the firm whose deal with the public for the profit intention, and they will charge the public at cost. While secondary firm is the organization whose deal with the strategic public for the purpose of non-profit, and they do not charge the public at the higher cost of service and

some of them will charge the public with no cost at all. The PS is the governmental agency and department who served to the Malaysian public entirely. The agency and department would not charge the public at higher cost. For every single treatment, service provided, opinion, other transaction from the government agency and department to the public is uncharged, and sometimes for the certain condition it is only charged with the lower fees for the certain services. The main purpose of this PS is to serves the public well.

3.2 Definition and term

In this paper, the category of innovation will be defines as stated by the Collection of Innovations (2011) Volume 5 book which be published by MPC. The product innovation can simply defined as a good or service that is new or significantly improved. It will include improvement in technical specification, component and materials, part of the product, incorporated software, use friendliness or other functional characteristics. In the education sector, a product innovation can be a new or significantly improved curriculum, new educational software and many more. Process innovation is a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Marketing innovation involves a new marketing method, significant changes in product design or packaging, product placement, product promotion or pricing. It can be a new way of pricing the service or a new promotion strategy. Organizational innovation refers to introduction of new organization method in the firm's business practices, workplace organization or external relations. In higher education, this can be a new way of organization of work between lectures, or organization changes in the administrative area.

According to Mulgan and Albury (2003), innovation refers to the new products and services novelty introduction which includes incremental innovation, radical innovation and transformative innovation. Incremental innovation refers to changes of the products whether tangible or intangible, and the process. Radical innovation requires a major discovery, and transformative innovation will contribute to the changes of the structure of the organization entirely. Many companies pay very much attention to the innovation as it will deliver benefits to the company particularly (Sato, 2009). He also emphasized that innovation is any concern of design; value of design thinking (democratize design thinking to innovate better), design function (experts in design thinking and applied design), design enable innovation, design to simplify, design to differentiate, design to innovate, and systematically relevance to customers in concepts and execution. Man (2001) concluded that the elements of innovation and creativity are the new ideas, extensive solutions, the impact of solutions, revolutionary and long lasting, new value, solutions that contribute to the business objectives and out of the box thinking.

Lewrick and Raeside (2012) in their study to the hi-tech companies revealed that there is a relationship between the innovation and the company performances as well. It drives the company synergies including product, strategy and network. Buerkler (2013) cited that the innovation is an improvement of the production and logistic and merely an actual result to the both element and components in the organizational. Ward et al. (2009) found that the innovation will improve and increase the features and characteristic of the product offered. It will reduce the operation costs by 25%. The marketability of the product will deliberately high when there is a new look and design, and also the specification of the product technically from the customer view. The most important thing here that needs to be focus is the cost saving of the company. By 25% of cost saving, it can be allocated to other activities of the company and will lead to the value added to business entirely. Innovation and new efficiencies is able to reduce the overhead in many sector and department such as Agriculture, Health, Rehabilitation, Job and Family Service department as well as other departments (Kasich, 2012).

Sato (2009) emphasized to the design factor as an input in innovation. Anderson et al. (2012) found that innovation culture was positively related to company performance but in local conditions. Tucker (2001) had comments that some companies found it innovation success primarily by accident. Shen et al. (2000) mentioned that the customer satisfaction can be increase by producing an attractive quality creation and product innovation. By contrast, innovation is a set of intermediaries that will contribute and stimulate to the good company performance (Janssen & Bouwman, 2014).

The important motivational factors in driving the innovation for users are learning (Stahlbrost & Bergvall-Kareborn, 2011). In Malaysia context, the motivation to the innovation is provide through many ways such as reward and recognition. People will learn innovation through learning process which participated through innovation challenges program and other contest of innovation provided by public sector and private sector. According to Ceserani (2011), the organizations may fail with innovation due to several reasons of people and organizations as shown in the Table 1.

Table 1. Why Organizations Fail with Innovation

People	People are competing with each other rather than co-operate with one another. Fail to work as cross-functional teams and preferring to stay in organizational silos or working individually. Meetings are unproductive and lacking real focus and discipline.
Organization	Lack of any formal innovation programs and techniques. Unwilling to consider external and fresh perspectives.

Ceserani (2011) provide a solution to overcome the factor in the Table 1. Institute or form a formal innovation programs, seeks ideas from outside the organization, foster communication and collaboration and make meetings more productive.

4. Research Methodology

4.1 Research framework

Resources Based View model by Wernerfelt (1984) emphasize to the importance of the resources and products of the firms. Almost products will extensively require the resources of the firm to be produce in a good quality. Resources and the products need to be treats as a two in one substance. It cannot be separately nor ignored by the organization. In this study, the products that produced by the innovation process is using the organization resources such as money and time. From the previous study, it is shown that the innovation has a significant relationship with the company performance. This study will observe the innovation from the cost saving stand point.

Glor (2013) in the study of rate mortality of the innovative and non-innovative organization found that the mortality between innovative organization and non-innovative organization did not differ too much. Innovation is only contributing to the lower percentage of mortality to the organization yearly. Mortality in this study means that disappearance of business organization from the business field. This study also did not reveal any evidence between the mortality of the organization caused by the firm performance. Even the previous studies shown the contribution of innovation to the firm performance is very significant, there is a lower evidence of the contribution to the mortality of the organization. Das and Puri (2003) states that the cost reduction is occurs in the automotive industry. It found that the industry innovation is very significant in the cost reduction especially materials costs and processing costs, and increasing the profit margin as well. The synergy of the resources and capabilities, innovation project are vital in order for the product improvement, cost reduction and successful in the market (Zirger & Maidique, 1990; Utterback, 1971; Rubenstein et al., 1976). From this statement, the assumption that can be made through the rule of thumb is the mortality of the organization is probably related to the performance of the organization. The performance of the firm could be caused by the cost saving of the firms that cannot be ignored.

5. Hypothesis

According to Ceserani (2011), the innovation survey shown that 80% of business leaders feel innovation is vital to the survival of the organization. Schiele et al. (2011) found that the procurement of highly innovative products or technology able to achieve the cost saving of the organizations. There exist a trade-off between low cost and innovation strategy (Bengtsson et al., 2009). Sørensen and Torfing (2012) found that innovation assisting much to the corporation in cost saving, product improvement and the most important element is markets extension.

H₀: There is no significant relationship between innovation and cost saving per year.

H₁: There is a significant relationship between innovation and cost saving per year.

6. Data and Procedure

The data in this study is obtained from the MPC through the Collection of Innovations Volume 5 book. The volume consists of corporation and government agency from three sectors namely manufacturing sector, service sector and public sector. This volume provides researcher the information regarding to the innovation project including the brief explanation of the company, project background, benchmark, project achievement, award, reward and recognition, project headline, project savings and many other information.

We use the nominal scale in classifying the sectors (1 = manufacturing sector, 2 = servicing sector and 3 = public sector), type of company (1 = multinational company and 2 = local company), type of innovation (1 = product innovation,

2 = process innovation, 3 = marketing innovation, 4 = organizational innovation and 5 = others innovation), benchmarking (1 = one benchmarking, 2 = two benchmarking, 3 = more than two benchmarking and 4 = no benchmarking), project achievement (1 = one project achievement, 2 = two project achievement, 3 = three project achievement, 4 = four project achievement and 5 = more than four project achievement), recognition (1 = one recognition, 2 = two recognition, 3 = three recognition, 4 = four recognition and 5 = more than 4 recognition) and cost saving (1 = less than RM1K, 2 = RM1K-10K, 3 = RM10K-50K, 4 = RM50K-RM100K, 5 = RM100K-RM200K, 6 = RM200K-RM300K, 7 = RM300K-RM400K, 8 = RM400K-RM500K, 9 = RM500K-RM1 million, 10 = More than RM1 million and 11 = no record).

7. Results and Discussion

Table 2 shows the type of innovation (product, process and organizational) followed by sectors (manufacturing, servicing and public). Based on the result, process innovation constitutes a larger percentage of 64.9% compare to product 19% and organizational 1%. Manufacturing sector constitutes large percentage of innovation with 38.6%, followed by public sector 35.1% and servicing sector by 26.3% accordingly. Manufacturing sector constitutes a higher participation in innovation where it able to improve and increase the features and characteristic of the product offered and contributes to the 25% reduction in the operation costs (Ward et al., 2009).

Table 2. Type of Innovation and Sector

Innovation	Frequency	Percent	Valid	Cumulative Percent
Product	19	33.3	33.3	
Process	37	64.9	64.9	33.3
Organizational	1	1.8	1.8	98.2
Total	57	100.0	100.0	100.0
Sector	Frequency	Percent	Valid	Cumulative Percent
Manufacturing	22	38.6	38.6	
Servicing	15	26.3	26.3	38.6
Public	20	35.1	35.1	64.9
Total	57	100.0	100.0	100.0

Next, we test the analysis of variance (ANNOVA) with post-hoc tests. The result shows the test of homogeneity of variances have not violated the homogeneity of variance assumption with the significant value of 0.171 which is larger than 0.05. Table 3 shows the result of ANNOVA where indicating statistically a significant difference on the cost saving between sectors of manufacturing, servicing and public with the significant value of 0.002. Therefore, we reject the null hypothesis at significant level 0.02.

Table 3. One Way Analysis of Variance (ANNOVA) Result

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	120.115	2	60.057		
Within Groups	472.938	54	8.758	6.857	0.002
Total	593.053	56			

The post-hoc tests result in the Table 4 shows that from three groups being compared one to another. All the groups are significantly different from one another at the value $p < 0.05$ level except public sector compared to servicing sector where the value $p > 0.05$ at 0.833. Manufacturing sector is statistically significant at 0.005 level compares to the servicing sector and at 0.013 level compares to public sector. While servicing sector is statistically not significant compares to public sectors at 0.833 level particularly. The results indicate that there is a difference regarding to the cost savings in innovation between manufacturing sector, servicing and public sector. While there is no significant difference between servicing sector and public sector in the cost saving.

Table 4. Post-Hoc Test Result

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound

Manufacturing	Servicing	3.27879*	0.99094	0.005	0.8906	5.6669
	Public	2.69545*	0.91433	0.013	0.4919	4.8990
Servicing	Manufacturing	-3.27879*	0.99094	0.005	-5.6669	-0.8906
	Public	-0.58333	1.01083	0.833	-3.0194	1.8528
Public	Manufacturing	-2.69545*	0.91433	0.013	-4.8990	-0.4919
	Servicing	0.58333	1.01083	0.833	-1.8528	3.0194

*The mean difference is significant at 0.05 level.

Based on the Table 5, correlation result between type of innovation and cost saving per year revealed that there is a positive correlation with the Pearson correlation coefficient value at 0.257. In order to measure the strength of relationship, we refer to Cohen (2013) who suggests that the small correlation $r = 0.10$ to 0.29 , medium correlation $r = 0.30$ to 0.49 and large correlation $r = 0.50$ to 1.00 . In this case, we classified that there is a small correlation between two variables which suggesting a weak positive relationship between innovation and cost saving.

Table 5. Pearson Correlation Result

		Innovation	Cost Saving Per Year
Innovation	Pearson correlation	1	0.257
	Sig. (2-tailed)		0.053
	N	57	57
Cost saving per year	Pearson correlation	0.257	1
	Sig. (2-tailed)	0.053	
	N	57	57

Table 6 indicates the Linear Regression analysis for innovation and cost saving. Based on the result, the correlation coefficient is at 0.257 and the R-squared is 0.066 value which means that innovation will only contribute 6.6% to the cost saving per year of the company. Beside that, the P-value is at 0.053 which is slightly larger than significant value 0.05. It means that the innovation as a predictor is statistically insignificant towards to the cost saving per year of the organizational.

Table 6. Result of Linear Regression Analysis

Model	R	R-Square	Adjusted R-Square	Std. Error of Estimate
1	0.257 ^a	0.066	0.049	3.17321

Figure 1 shows the cost saving per year followed by sector. It shows that the manufacturing sector is enjoying the higher cost saving per year, followed by servicing sector and public sector as well. The highest cost saving per year for manufacturing sector is more than one million that be enjoyed by more than 6 companies. While in the servicing sector, the highest cost saving per year is between RM10,001 to RM50,000 which enjoyed by six companies. Lastly, the public sector record two highest figure for cost saving that is between RM10,001 to RM50,000 and between RM1,001 to RM10,000.

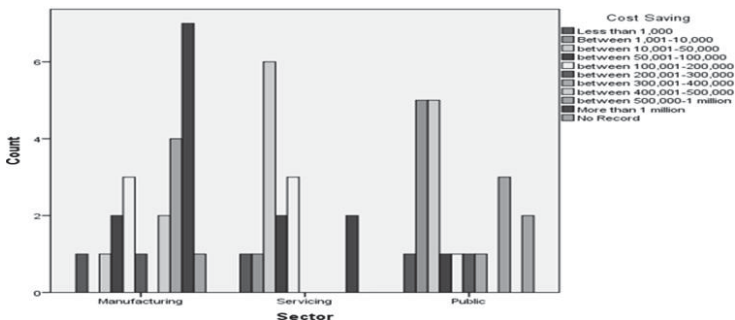


Figure 1. Cost Saving Per Year Followed by Sectors

8. Conclusion

Generally, there is a positive relationship between the innovation project and the cost saving per year by the three sectors. This finding support Lewrick and Raeside (2012) and Anderson et al. (2012) study on the innovation and the company performance, as well as Ward et al. (2009) study on the innovation and the operation cost reduction. Even though the relationship is not very strong as the result of the Pearson correlation shows only 0.257 value which close to zero level, but this study reveals that the manufacturing sector enjoying the high level of cost saving per year compare to other two sector servicing and public. This is probably the manufacturing sector consume the higher number of raw materials which using the variety of over-head cost, operating and producing by using hi-tech machinery. It apply the highly maintenance of machinery during the operation and production period compare to the servicing and public sector. It is suggested that the manufacturing sector should participate and involve to the innovation project and applied in the daily operation. Until recently as regard to this study, only 38.6% of the innovation project came from the manufacturing sector.

The innovation project and the cost saving per year by the three sectors manufacturing, servicing and public are in the different amount. As innovation is able in saving the cost per year even in a small value, it directly will also increase the organizational profit from year to year. Therefore, the business company should investing more to the innovation project and participating in the innovation program in order to motivate their personnel to involve more seriously in the innovation event. For the future work, we proposed to study the relationship of the innovation and the benchmarking of every single innovation project that conduct by the business firm or non-business firm. This is due to the every innovation project run by the organization normally benchmarking will take place to provide clear insight of the innovation project. This will incur costs and other utilities. Therefore, we should identify that does every innovation project should have benchmarking, and what is the contribution of the benchmarking to the successfulness of the innovation project.

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