



Proceedings of International Conference on Strategies in Volatile and Uncertain Environment for Emerging Markets
July 14-15, 2017
Indian Institute of Technology Delhi, New Delhi
pp.428-434

Business Intelligence for Frugal, Reverse and Sustainable Innovation Success

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Abstract

Businesses all over the world are realising the need to get focused on catering to their customers from different economies and social strata for sustainable business success. In this endeavor, they are compelled to come up with innovation and design marketing strategies that are inclusive in nature and also profitable. This scenario implies that companies need to be equipped with information systems that can assist them in discovering the information about product and services in need of innovation and the areas that can benefit with development and introduction of new product and services. Thus enabling decision making that ensures retention of current customer base and acquisition of new customers. This study builds on latest available literature on Business Intelligence (BI) systems and frugal, reverse and sustainable innovations. Finally, the study presents a conceptual model for a Business Intelligence (BI) system based on business intelligence system success, project management and reverse innovation. The study provides an insight to all managers at various levels in the organization about the best practices for attaining success in business through their innovation ventures, marketing plans and strategies in the interconnected world. The finding will also serve as a road map for software development team developing BI solutions.

Keywords: Business Intelligence, Project Management, Reverse Innovation, Success

1. Introduction

It is widely known that have access to right information at the right time is the key to success in any business endeavor. This is all the truer when our business objectives include evaluating our product and services that are in need to innovation or discovering areas that can benefit with the introduction of new product and services. Needless to say that these are the very objectives and corns of most business all across the globe aiming to ensure sustainability of their business enterprise. At the same time this situation also highlights the need to have a information system in place in organization that is capable of providing information that can help managers take decision about which product and services are in need of innovation, what are the new product and services that can be worked on and offered to their customer and finally how to they bridge the gap between their products and potential customer base across globe.

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Business Intelligent systems are a set of tools and technology that works on data collected from various source to provide information that can help decision makers in the organization in taking decision on various matters related to the organization. Business Intelligence systems are being used by organizations for a long time to now to generate reports for descriptive analysis of their various business activities. But with changing business scenarios and shift in business paradigm, these systems are proving to be inadequate the assist managers in answering the queries that the new business model frontiers demand.

The general perception about innovation is that this is something that happens in developed countries using best of tools and technology and that leads to production of expensive products. But over the years several innovations also called frugal innovations coming out form developing countries have proven to be very successful in developed countries due to their sheer usability and portability factor. These are called reverse innovation and are increasingly gaining popularity among both rich and poor. Inclusiveness and sustainability agenda of businesses has compelled them to go beyond their backyards to innovate their product, services and processes remain ahead in today's fiercely competitive market. These very agenda has also forced that business to reverse innovate in order to have a profitable business.

The challenge facing organizations today is how to design a Business Intelligence system that takes into account plethora of data points and processes and provides insight that can assist managers in their innovation, reverse innovation and sustainability agenda.

2. Review of Literature

a. Reverse Innovation

The rise of the emerging market has refined the global innovation strategy. The focus has now shifted to those innovations with attributes like accessibility, affordability and sustainability. Hence the managers need to adopt the top-down and bottom-up approach to discover the innovation opportunities (Qiu and Fan, 2013). Understanding the need of the bottom of the pyramid customer and the market for social impact technology is a huge challenge for most consumer product companies. Thus propelling them to look for technology and models that can assist them the target market for the social impact products, (Jue and Pruter, 2015). The term Reverse Innovation have been used in different context in different words like Frugal Innovation, Trickle-up innovation, Disruptive Innovation and of course the Reverse innovation, (Harris, 2016). A case study on Arvind Eye Care by Vijay Govindarajan, (Govindarajan, 2013), highlighted the factors that lead to successful reverse innovation. At the core of this hospital is a noble purpose that is to provide world class eye care to all. And also there is the need to stay in the business. These two factors combined compelled them to resort to affordable innovations, forcing them to go out of the way to provide free eye care to poor people, thus, in turn building volume for their business, this in turn lead to core competency and specialization opportunities for their doctors and hence builds quality in services offered by the hospital. The Hub and Spoke model, (Govindarajan, 2013), used by the hospital where in the hub created volume, resulting in the reduced fixed and reduced variable cost, coupled with excellent task shifting and lowered ideal time has lead to avoidance of needless waste. Also knowledge sharing by hospital about the process adopted for success has build demand for the brand.

Govindarajan, (Govindarajan, 2013), also explained a business model for ensuring current and future successes for businesses in the area of innovation. Business should divide or segregate their project in 3 boxes. The list of project in the first box also called gap the performance box should have current project that need to be evaluated bettering the existing performance with techniques like six sigma and continuous improvement. Such projects are example of linear

innovation. In the box two and three also called the fill the possibility gap boxes. These are the example of non linear innovation and require change in the business model for their success. After this, we need to allocate resources for projects in each of these boxes and not try to divert it for any other purpose thus ensuring flow of required resources for the project activity. Finally regarding evaluation of performance of project, we need to have separate measure for evaluating the projects in each of these boxes. For box one the performance of the project should be the measure for evaluation and but for projects in box two and there evaluation measure should be accountability on learning.

A study by (Amit and Zott, 2012), has pointed out that for most managers now, business model innovation is more important than product innovation. They have also discussed the factor constituting the business model innovation. These factors are novelty, lock-in, complementarities and efficiency. The rise of immersing economies has propelled a huge shift in the business trends and business paradigm. There is a growing trend of companies from developing countries acquiring companies in the developed countries and setting forth the pace for reverse innovation (Brem and Ivens, 2013).

From the review so far we conclude that businesses both large and small and either or developing country or from developed country can benefit in their innovation and sustainable innovation agenda if they tread the path or adopt the process followed by some of the developing nations for reverse innovation.

b. Business Intelligence System

Business Intelligent systems are data driven decision support systems that query historical data base and provide report at regular interval (Power, 2008). DeLone and McLean IS Success Model has been used to explain Business Intelligence Success over the time by various researches (Mishra and Saini, 2015). Organizational capability for business intelligence success have been studied from various perspective by different researchers (Mishra, 2015), over the years as, flexibility, change management, mindfulness, risk level, user evaluation and human factor. Technological capability for business intelligence success has also been explored from several perspectives (Mishra, 2015), as data quality, information quality, systems interaction, user access etc. Business intelligence success itself have been redefined over the time (Mishra, 2015) as user satisfaction, system quality, information quality, service quality and user friendliness.

Demonstrating value addition in public sector is difficult. Hence in order to encompass three essential success or value clusters which incorporate efficiency, effectiveness and social value a new public value theory is proposed by (Scott *et al.*, 2016). Various statistical and analytical techniques have been used to demonstrate relation between various variable attributed to business intelligence system successful performance. A study by (Ghazanfari *et al.*, 2011) has shown that by apply techniques like association rule mining managers are able to do sentiment analysis and thus able to discover purchase patter of customers.

Though there is lot of literature available for business intelligence system the authors of the study could not find literature on a BI system designed to provide information for reverse innovation success. From the discussion above the authors conclude that in order to design a business intelligence model for reverse innovation success, a new innovative model need to be designed based on understanding gained so far. The new model would constitute construct drawn from BI, project management for innovation and reverse innovation success. Following the review of literature and authors prior work, the hypotheses for BI model for reverse innovation success are as follows.

A. Hypotheses

H1a: There is no relationship between the measures for efficiency and BI for reverse innovation success.

H1b: There is no relationship between the measure for effectiveness and BI for reverse innovation success.

H1c: There is no relationship between the measure for social value and BI for reverse innovation success.

H1d: There is no relationship between the measure for novelty and BI for reverse innovation success.

H1e: There is no relationship between the measure for lock-in and BI for reverse innovation success.

H1g: There is no relationship between the measure for complementarities and BI for reverse innovation success.

H1h: There is no relationship between the measure for efficiency and BI for reverse innovation success.

H1i: There is no relationship between the technological capabilities and BI for reverse innovation success.

H1j: There is no relationship between the organization capabilities and BI for reverse innovation success.

B. Theoretical Framework

The conceptual model for business intelligence system for reverse innovation is shown in Figure 4.

3. Objective

The objective of the study is to create a conceptual model for a Business Intelligence (BI) system based on multiple theories for business intelligence system success, project management and reverse innovation for providing information leading to reserve innovation success.

4. Research Methodology

The study made use of latest available literature from domain of business intelligence, project management, marketing, innovation, reverse innovation and sustainable innovation from India and abroad to explore the variable and processes discussed so far for designing such a system. Following literature review the constructs and variables discovered for BI system for reverse innovation success is presented in a tabular form. The unit of analysis for the study is business organization either already into creation of social innovation or planning to venture out. The present study aims to create a knowledgebase for further conceptual or empirical study.

5. Findings and Discussion

Use of variance theory that explain how independent variable explain the variance in the dependent variable and use of process theory that explain the link between time and event, when take together help to explain the a phenomenon logically, (Markus and Robey, 1988).

Following review of literature the study present the process model as shown in Figure 1, which form the part of the conceptual model as shown in the Figure 3.

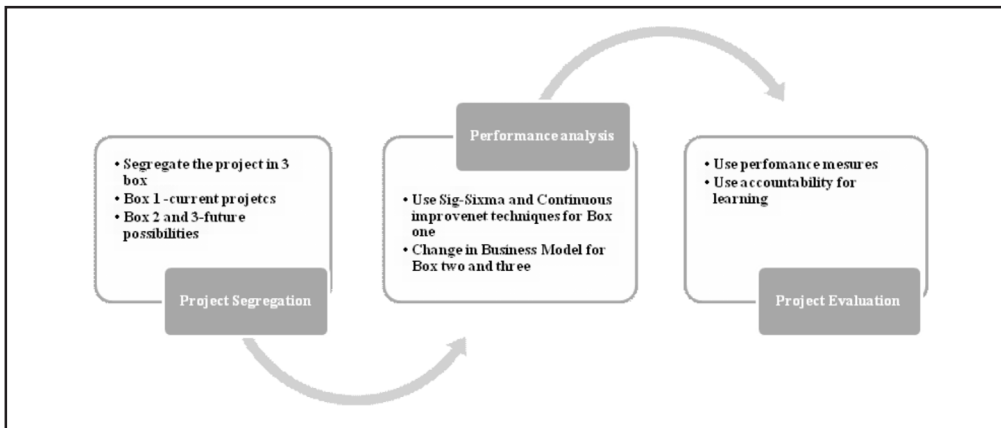


Figure 1: Govindrajan Model for Managing Projects for Innovations

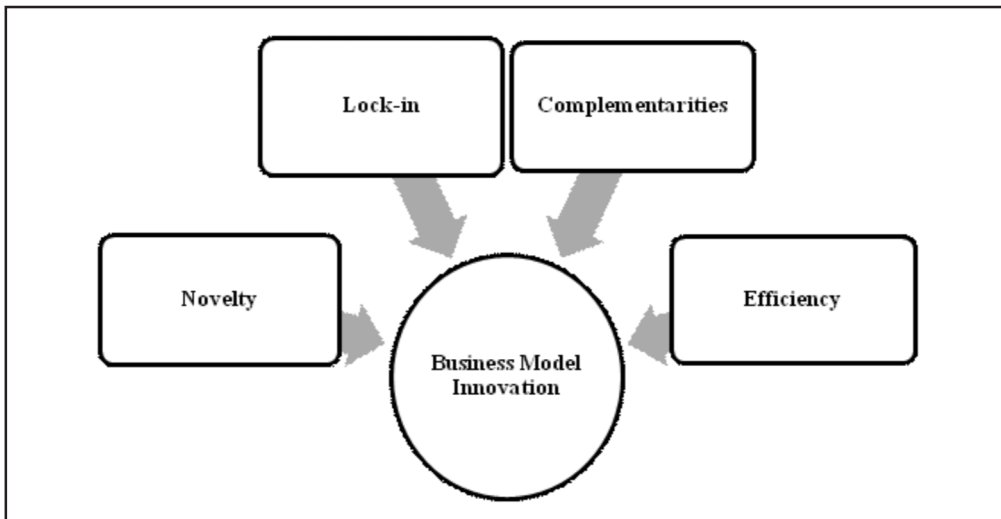


Figure 2: Factors for Business Model Innovation

Source: Amit and Zott, 2012

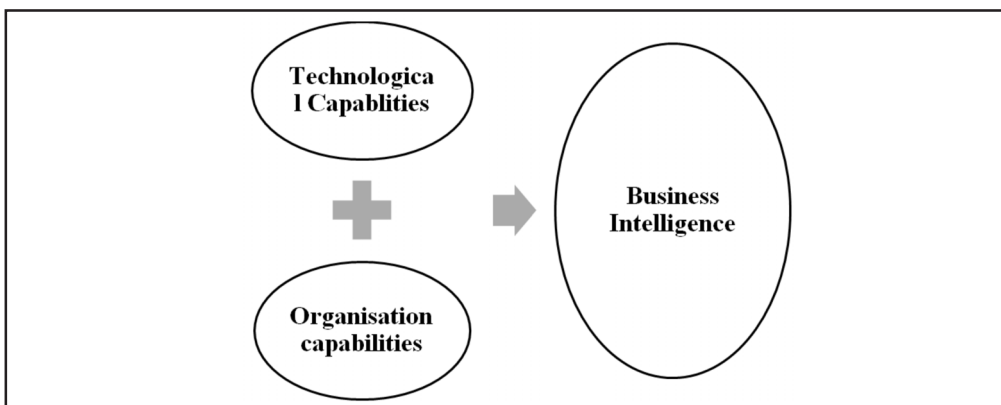


Figure 3: Business Intelligence Model

Source: Isik, 2013

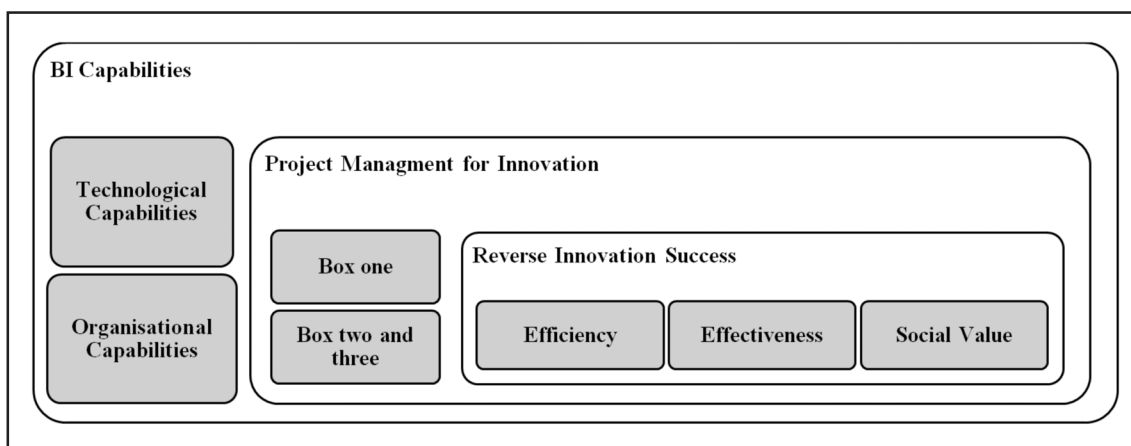


Figure 4: A Conceptual Model for Business Intelligence System for Reverse Innovation Success

The conceptual model for business intelligence system for reverse innovation is as shown in Figure 4, has three levels. Level one depicts the requirements or BI capabilities for business intelligence system, also shown separately in Figure 2. At the second level is the project management process, shown separately in Figure 1. And at the third level is the measure for successful BI system for reverse innovation. The assumption which follows from review of literature is that a BI system for reverse innovation success would constitute measures for defining reverse innovation success, measures for project management for innovation and measures required for BI capabilities for data processing and visualization.

This system would have required integration for processes and technology for smooth functioning upon implementation. Following are the Variable and construct found for the conceptual model as shown in Table 1.

Table 1: Variable and Construct

Construct	Variable	Source
BI Capabilities	Technological Capabilities	Isik, 2013
	Organizational Capabilities	Isik, 2013
Business Model Innovation	Novelty	Amit, R., & Zott, C., 2012
	Lock-in	Amit, R., & Zott, C., 2012
	Complementarities	Amit, R., & Zott, C., 2012
	Efficiency	Amit, R., & Zott, C., 2012
BI for Reverse Innovation	Social Value	Scott, M., et. al,2016
	Effectiveness	Scott, M., et. al,2016
	Efficiency	Scott, M., et. al,2016

6. Conclusion

Businesses all over the world are realising the need to get focused on catering to their customers from different economies and social strata for sustainable business success. This scenario implies that companies need to be equipped with information systems that can assist them in discovering the information about product and services in need of innovation and the areas that can benefit with development and introduction of new product and services. The study presents a conceptual model for a Business Intelligence (BI) system based on business intelligence system success, project management and reverse innovation for development of BI system for reverse innovation success. The study provides an insight to all managers at various levels in the organization about the best practices for attaining success in business through their innovation ventures, marketing plans and strategies in the interconnected world. The finding will also serve as a road map for software development team developing BI solutions for reverse innovation success system. The study will also serve as a knowledgebase for further conceptual and empirical research.

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