

IMPACT OF OPEN INNOVATION ON BUSINESS MODEL INNOVATION: A STUDY OF SMES IN PUNJAB

Deepika Kamboj¹ & Shukrant Jagotra²

¹Assistant Professor, Dev Samaj College for Women, Sector 45, Chandigarh

²Research Scholar, School of Management Studies, Punjabi University Patiala

Abstract

SMEs have acted as backbone of rural India by providing ample employment opportunities and infrastructural developments. The number of SMEs in India is growing at a fast pace hence increasing the competition. Punjab is one such state having large number of SMEs in different segments. In order to diversify and excel, SMEs are undertaking innovative practices and trying to create a competitive advantage by incorporating innovation through different ways. This paper examines the relationship between Open Innovation and Business Model Innovation by interviewing 120 respondents and collecting responses with the help of a structured questionnaire. It is a descriptive study exploring relationship through linear modeling. The results of the study show significant and positive relationship among Open Innovation, Business Model Innovation.

Keywords: *Open Innovation, Inbound Open Innovation, Outbound Open Innovation, Business Model Innovation, SMEs, Automatic Linear Modeling, Shapiro-Wilk test*



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1. Introduction

The business model is the center of worth creation for businesses a critical mean of increasing an upper hand (Amit and Zott,2001; Chesbrough and Rosenbloom, 2002; Matthyssens et al., 2006). With advancing innovation in a dubious situation, undertakings need to reexamine and ought to keep on attempting to make new business models (Voelpel et al., 2004). Business model innovation is defined as repositioning a customer value proposition (CVP), including the redesigning the profit formula and identification of key resources and processes (Johnson et al., 2008; Moore, 2004). The business model innovation may be considered as open door for existing ventures to re-concoct a totally distinctive business model, and change customer value and value delivery methods (Markides, 2006; Matthyssens et al., 2006; Moore, 2004).

In the customary shut innovation model, organizations center their procedure of innovation on innovative work, patent applications, and the methodology of actualizing their innovation available (Calantone and Stanko, 2007). Shut innovation model has met different natural

difficulties, including the increment of learning specialists and their high level of portability, the development of private investment, the shortening of item innovation life cycles, and the expanded R&D costs. Businesses with shut innovation models think that it hard to contend. Chesbrough (2003a) presented the idea of open innovation; an expanding need to embrace an open innovation model endures. This is serving to grow new thoughts, as well as produces more imaginative so they can be viable and upgrade execution, when contrasted with customary innovation, "open innovation" focused by Chesbrough (2003a,b,c), depicts a center idea of undertakings developing through their already shut ways to take in more creative thoughts from the outer environment while offering one of a kind inventive thoughts to different associations, creating creative imparting. Open innovation means eradicating limits in the middle of organizations and their surroundings as inventive thoughts move through distinctive association.

2. Review of Literature

Li-Min Hsueh And Ying-Yi Tu, (2014) explored the relationship between innovation and the performance of newly established small and medium enterprises. For this study an effective sample of 1047 enterprises were measured through a telephonic questionnaire. The study identifies entrepreneurial spirit, entrepreneurial characteristics, resource management and organization and external environment as factors that have significant impact upon firm's performance. The performance of firm is measured in terms of average growth of sale and average growth of operational profit along with disparity between actual and expected profit. The study revealed that activities related to innovation has a significant impact on performance of firm and outlined two factor that has a positive impact on firm's performance i.e. entrepreneurial spirit and resource management.

Al-Ansari Yahya Pervan Simon Xu Jun (2013) studied imaginative attributes of SMEs and the relationship between their innovation and business performance in rising Dubai market. Information was gathered from 200 SMEs. Organized overview was utilized, created from an efficient writing survey. Both enlightening and inferential measurements were utilized to assess the discoveries. Discoveries depicted the creative qualities of SMEs and critical positive connection in the middle of innovation and business performance. Study offers SMEs with inventive practices a superior viewpoint of their business and business situations. Study is restricted to SMEs in the Dubai. Further research could likewise take a gander at different markets and utilization subjective exploration techniques. It gives imperative bits of knowledge that could help SMEs in their comprehension of innovation and its advantage in

developing markets. Discoveries additionally disaffirm the presumption that innovation channels assets.

Pooran Wynarczyk, (2013) examined the impact of open innovation practices on innovation capabilities and export performance of UK based small and medium enterprises. This study involves a quantitative investigation of 64 SMEs that included 31 closed innovation firms and 33 open innovation firms. The results of this study demonstrated that the export performance of such firms were highly dependent upon R&D strategy and management structure and competences. The two external factors were also found to be equally influencing i.e. technological development and the ability of the firm to attract government grants. The results showed that innovation activities have a complex and multi faceted impact on performance of firm.

Boumediene Ramdani Delroy Chevers Densil A. Williams, (2013) explored the technology organization environmental factors influencing the performance of small and medium enterprises. The study examines 102 responses of randomly selected small and medium enterprises collected by direct interviews. Partial least square technique is used to analyze the responses. This study uses technological context, organizational context and environmental context as its variable to measure a firm's ability to adopt enterprise systems. The scope of this study is limited as this study as it relates only to the adoption of enterprise application.

Solomon Leiro Letangulenicholas K. Letting, (2012) investigated the effect of innovation strategies adopted by firms in the telecommunication industry in Kenya on performance. Data was analyzed though descriptive statistics and the relationship between the variables established using regression analysis. This study collected quantitative data from 40 managers from the four key players in the telecommunication industry in Kenya (Safaricom ltd, Airtel, Essar and Orange) using a self-administered questionnaire with a five point Likert scaled questions. The data was presented through percentages, means, standard deviations and frequencies. The paper concludes that adoption of innovation strategies affected performance of the firms to a great extent.

Gurhan Gunday Gunduz Ulusoy Kemal Kilic Lutfihak Alpan, (2011) explored innovations and their effects on firm performance by examining product, process, marketing and organizational innovations, as well as by focusing on various aspects of firm performance such as innovative performance, production performance, market performance and financial performance. Therefore the main contribution of this study is the comprehensive innovation-performance analysis based on empirical data, which not only revealed the positive effects of

innovation types on firm performance but also yielded a path of relations among these variables by surveying 184 manufacturing units in turkey.

Gunday, Gurhan, Et Al. (2011) investigated the impacts of the organizational, process, item, and showcasing innovations of new things on the distinctive parts of firm performance, including new and intriguing, creation, market, and budgetary performances, in light of a confirmation based study covering 184 assembling firms in Turkey. An (identified with thoughts regarding how things work or why they happen) structure is tried distinguishing the connections amidst innovations of new things and firm performance through a joined (with different things) innovation of new things-performance examination. The results show the positive effects of innovations of new things on firm performance in manufacturing industries.

3. Objectives of the Study

To study the influence of open innovation on business model innovation

4. Hypotheses

The center of open advancement is business model innovation (Chesbrough and Schwartz, 2007). Business model innovation is unique in relation to existing plans of action in that organizations must form and permit entrance of internal and outside learning into the hierarchical operations. To reduce time and expense, organizations chip in with outer associations. A critical system of the business model is to increase and advance the utilization of outer learning to the venture, and not just concentrate on existing inside information. Consequently, organizations that are more slanted to embrace open innovation are likewise more slanted toward a business model innovation.

H1: Open innovation has a positive influence on business model innovation

5. Research Methodology

5.1 Research Design

Table 1

Objective	Demographic Variable	IDV	DV
To study the impact of open innovation on business model innovation	Number of employees	Open Innovation	Business Model Innovation
	Industry		
	Age of Firm		
	Owner/Manager		

5.2 Sampling

A sample size of 120 participants is interviewed for responses. Number of samples from different cities is proportionate to the total population. Random sampling technique is used for selecting samples. Random sample tables are applied on list of SMEs. The use of SRS

method in the selection of participant has reduced bias to the minimum. The methodology employed in this research involves a combination of questionnaire, and personal interview.

5.3 Data Collection

Data collection is done with the help of structured questionnaire. Questionnaire is divided into five sections; inbound open innovation, outbound open innovation, business model Innovation, firm performance and demographics of firm.

5.4 Data Analysis

To arrive at important analysis, the collected data is analyzed using SPSS package. To arrive at certain end result regarding the guess advanced in the process investigation, the following statistical tools will be applied:

1. Descriptive
2. CrossTabulation
3. Automatic Linear Modeling

5.5 Measurement Scales

Table 2

Scale	Authors
Inbound Open Innovation	Chesbrough (2004); Laursen and Salter (2006); Van de Vrande et al. (2009)
Outbound Open Innovation	Chesbrough and Garman (2009); Lichtenthler (2009)
Business Model Innovation	Johnson et al. (2008); Moore (2004)

6. Data Analysis

6.1 Number of Employees

Table 3

Number	Count	Percentage
1	9	6.0%
2-3	5	3.4%
4-5	13	8.7%
6-9	23	15.4%
10-19	32	21.5%
20-49	18	12.1%
>49	19	12.8%

The distribution of number of employees in responding SMEs varied from 1 to 200, however, for the purpose of analysis, the categorization was done as shown in the above table. 21.5% SMEs has 10 to 19 employees; similar percentage of SMEs (12.1% & 12.8%) had 20-49 and more than 49 employees.

6.2 Industry to which SME belonged

Majority of the data was collected from SMEs from manufacturing industries, 102 (68.5%), manufacturing SMEs were considered for the study. Apart from that few Wholesale and Retail commerce (8.1%) and Hotels and Restaurants (3.4%) SMEs were included in the study.

Table 4

Industry	Count	Percent
Wholesale and Retail commerce	12	8.1%
Manufacturing	102	68.5%
Construction	0	0.0%
Hotels and Restaurants	5	3.4%
Real estate	0	0.0%
Transports and communication	0	0.0%
Entertainment and Sports	0	0.0%
Health and Social Care	0	0.0%
Education	0	0.0%
Others	0	0.0%

6.3 Age of Organization (in years)

Table 5

Age (in years)	Count	Percentage
1-3	9	6.0%
4-10	37	24.8%
11-20	35	23.5%
21-40	24	16.1%
>40	4	2.7%

The age of the organizations considered varied between 2 years to more than 60 years. For the analysis purposes, the classification was done as stated in the above table. Most of the organizations has been in existence for less than 20 years, in which 23% (approx.) were aged between 11-20 years, approximately 25% were between 4-10years.

6.4 Owner-Manager

Whether the SME's functions were managed by the owner himself or were there a designated position of a qualified manager to manage the firm's functions.

Yes= There is a Manager

No= The owner himself acts as the manager

Table 6

S.No.	Owner-Manager	Count	Percentage
1	Yes	84	56.4%
2	No	35	23.5%

6.5 Size of the Firm

Table 7

Sales Volume (in INR)	Count	Percentage
0-25 Lac	12	8.1%
26-50 Lac	8	5.4%
51-75 Lac	12	8.1%
76Lac-1 Cr	8	5.4%
1-5 Cr	29	19.5%
>5Cr	50	33.6%

6.6 Normality of the Data

For an alpha value of 0.05, the p-value of Shapiro-Wilk test for the data set rejects the null hypothesis that the data are from a normally distributed population. The figure shows that the residuals for firm performance is not normal and is skewed toward positive side of the mean value.

7. Hypothesis Testing

H1: Open Innovation has a positive influence on Business Model Innovation. Automatic Linear Modeling

The model summary for Automatic Linear Modeling is shown below. The target for this model is Business Model Innovation of the organization to understand the relationship between various independent variables Business Model Innovation of the firm.

Table 8

Target	Business Model Innovation
AutomaticDataPreparation	On
ModelSelectionMethod	Forward Stepwise
Information Criterion	-48.899

Predictor Importance

The predictor importance of independent variables for determining Business Model Innovation is shown in the following figure. After trimming outliers the significant variables left

1. Outbound OpenInnovation

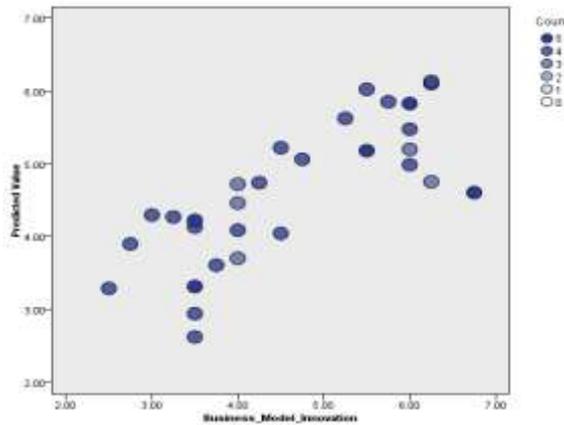


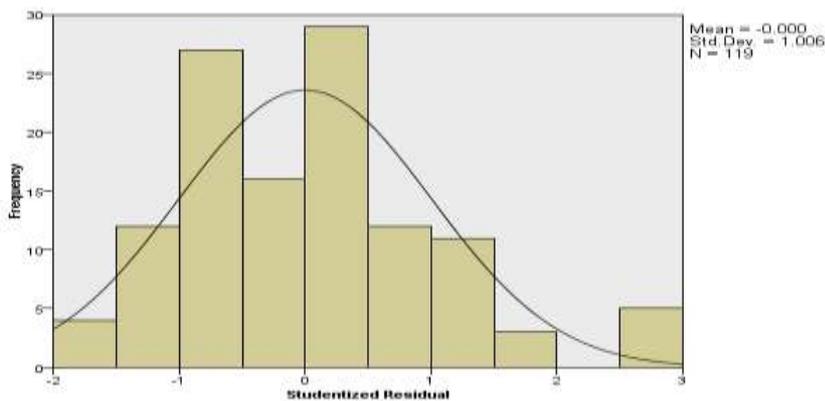
Figure 1 - Predicted by Observed

Calculated values have predicted that the model shows Business Model Innovation. Observed values show direct values of Business Model Innovation. This scattered graph which shows predicted values and observed values. The angle made by the predicted values is roughly 45 degrees shows that observed values are similar to predicted values. Count is the number of samples lying on that part.

Residuals

The histogram of residuals compares the distribution of the residuals to a normal distribution. The smooth line represents the normal distribution. The closer the frequencies of the residuals are to this line, the closer the distribution of the residuals is to the normal distribution. The histogram illustrates an approximately normal distribution of residuals produced by a model for a calibration process. We have superimposed a normal density function on the histogram.

Figure 2



Effects (Target: Business Model Innovation)

As shown in the table below, the significant values for the corrected model comes out to be lower than 0.05, hence indicating that this is an acceptable model.

Table 9

Source	Sum Squares	of Df	Mean Square	F	Sig.
Corrected model	106.122	3	35.374	55.306	.000
Residual	73.555	115	0.640		
Corrected Total	179.676	118			

The effects of the transformed variables are shown in the tables below. The significant values for given independent variables come out to be less than 0.05, showing that they have a significant relationship with the Business Model Innovation.

8. Conclusion

Open innovation has a significant positive influence on business model innovation. To create the free flow of innovative ideas within the organization and between organizations, enterprises must broaden their process of innovation and change its business model in the hope of innovating from a variety of sources. The search can be an effective technique to enhance organizational performance, and utilize idle internal technology or license and share it externally. Companies must allow internal and external penetration of innovative ideas, allowing enterprises to use its intellectual property more effectively to create and obtain value. These experimental results are consistent with previous empirical research results (Chesbrough, 2003a, b, 2006, 2007a; Chesbrough and Schwartz, 2007).

9. References

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