



## **Challenges and Benefits of SMEs in Bangladesh to Adopt Open Innovation: A Quantitative Study**

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### **Abstract:**

SMEs are considered to be the key driver of the economy of any country. Especially in a middle-income country like ours where the population is high but the opportunities for creating new jobs are far less. In this case, the SME industry offers maximum employment opportunities for the local people and helps to increase the quality of life. But at present, small and medium enterprises of Bangladesh are facing many challenges. This paper analyzes various aspects of the SME sector, especially the benefits and challenges, and made an effort to find ways to overcome these challenges. Therefore, this study examines the challenges and benefits of SMEs in Bangladesh to adopt open innovation. Structured questionnaire was used to collect data from 80 business entities belonging to SME traders through multistage sampling method which made of stratified, purposive and random sampling. Multiple regressions were used to analyze the data collected in order to determine the effects of independent variables (Challenges face by SMEs), entrepreneurial dimensions on dependent variable (Open Innovation). This study outcome exposed that challenges of SMEs have significant effects on open innovation. The study also exposed that the independent variable “lacking information” has a highest beta score than the other variables, which is a major barrier to open innovation adoption in the small and medium enterprises of Bangladesh. It was concluded that, 74.9% of the total variation in the open innovation data is explained by challenges of SMEs. Therefore, it is recommended that the government should take the necessary steps in view of the existing challenges of small and

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medium industries and try to play a role in the socio-economic development of the country by strengthening the path of development in this industry.

**Keyword:** Challenges, Benefit, Open Innovation, SMEs, Entrepreneur.

### **Introduction:**

The significant role of small and medium enterprises in the overall economic development of developing countries such as Bangladesh is unacceptable. This sector is able to contribute rapidly to national income growth and employment generation due to labor intensive and short production period. Sustainable development goals, especially eliminating extreme poverty and hunger, and the sector have a huge role to play in equality and empowerment of women. SMEs are playing a vital role in the economic development of some of Asia's most prosperous countries. Besides, other countries of the world are also putting great emphasis on SMEs. In their view, SMEs are the Employment Generating Machine and that is why they have chosen the development of small and medium enterprises as a tool to achieve economic growth reduce income generation, poverty alleviation and so on. The present government has also identified the development of SME sector as the driving force of industrialization and the priority sector.

### **Literature Review:**

Hasan and Islam (2008) identifies that banks normally do no longer specific hobby closer to SME financing. The cause at the back of this conservativeness is greater operational cost, much less return and excessive chance related with the SME financing. Due to small mortgage dimension the operational value is greater and they require intensive monitoring and supervision. The essential purpose for greater hazard is that the small and medium entrepreneurs are especially not likely to comply with the collateral necessities as commonly they do no longer have immovable properties. With the excuse of collateral every now and then banks and non-bank economic establishments are reluctant to finance SMEs

Bangladesh Bank Report (2013) says, the key motives in the back of the SMEs are now not getting into manufacturing however are monetary constrains, dismal country of utilities, technological know-how and coverage discriminations. On the different hand, Bank and others monetary establishments usually choose massive organization consumers due to the fact of decrease schemes, and accordingly are compelled to rely on formal sources of money at an awful lot greater hobby rates, the Bangladesh Bank document said. The BB report, however, stated that different interrelated issues like scarcity of brief and lengthy time period finance, lack of current science and lack of promotional aid offerings are fundamental limitations in the way of improvement of the SMEs sector. Higher boom of the Small and Medium Enterprises (SMEs)

can assist reduce poverty to a quality stage via disposing of more than a few prejudices towards labor intensive and growing jobs for the knowledgeable manpower in the SME sector. Transition fees and increased availability of collateral. The SMEs additionally fall backyard the attain of micro finance.

About 6.0 million SMEs are actively performing in Bangladesh which have been contributing 25 per cent of the complete GDP, using about 31 million human beings and presenting seventy five per cent of family income. Various classes of SMEs collectively make a contribution between eighty to eighty five per cent of industrial employment and 23 percentage of complete employment in Bangladesh (Chowdhury, 2015).

The troubles confronted with the aid of SMEs in India are associated to the lack of credit score amenities from banks and other financial institutions, infrastructure problems, unavailability of uncooked materials, lack of education to employees; lack of competencies each organizational and technical, competitions from massive companies. These principal challenges are making them incapable of competing the businesses of different large economies and making their earnings era procedure sluggish and which is affecting the increase of the business enterprise (Mathai 2015).

There are majorly six challenges which are situation of obtaining finance and credit score instruments, elaborate regulatory insurance policies for beginning a business, unavailability of modern-day and Affordable technology, lack of fundamental infrastructure facilities, absence of one of a kind advertising and marketing Platforms and distribution networks, rigid labor legal guidelines and availability of low cost Skilled labor. Government ought to put into effect some schemes for encouraging SMEs (Tripathi 2016).

The largest venture for the SMEs is the low export subsidy supplied with the aid of the Government of India to the small and medium scale industries as they are very necessary for an enterprise to compete with the pricing approach of different massive economies of the world. The rivals experience greater quantity of subsidies from their authorities than Indian SMEs. The 2nd largest stood is the infrastructure required for the improvement of SMEs in India. Infrastructure associated troubles like the manufacturing unit set-up, capacity, remoteness to ports, accessibility to the export destination, lack of warehouses in the overseas markets, etc. pose serious venture to the Indian small and medium sized exporters as in contrast to their rivals and the 0.33 being the market cognizance and export advertising issues as they fell quick of precise market facts due to lack of export advertising and enterprise improvement exercises. Export promoting is additionally minimal due to the fact of restricted quantity of dollars and lack of records about the export markets (Ghouse 2017).

The challenges confronted by means of SMEs in India are excessive fee of credit, concern of procurement of uncooked substances at an aggressive price, insufficient infrastructural facilities, and lack of professional manpower. The following case find out about additionally took into

account a case on Indian Coir enterprise which proved that exports in international market has accelerated with time however the export revenue has lowered and the enterprise is going through a challenging opposition with the international gamers (especially China). To overcome such troubles a technological up gradation is required and the merchandising of Coir product is required in the world market which will differentiate Indian merchandise with others (Mukherjee 2018).

### **Research Problem:**

Small and medium enterprises of Bangladesh are facing challenges and trying to understand the benefits to SMEs to adopt open innovation.

### **Research Objective:**

- i. To study the concept, nature and role of entrepreneurs in open innovation in SMEs in Bangladesh.
- ii. To study the challenges faced by SMEs in Bangladesh.
- iii. To Study the effect of challenges on the SMEs sector in Bangladesh.
- iv. To study the benefits of adopting open innovation in Bangladesh

### **Methodology:**

This study accepted a multi-stage sampling technique. This concerned three sampling technique which consist of stratified, purposive and random sampling that used to be administered all in a steadily pursuant manner, which means that sampling is executed at different period of the sampling method. Three regions of Dhaka division were selected by applying a stratified random sampling technique. One region was selected for each district. In all, three local areas were selected for this survey requirement. In addition, small and medium entrepreneurs was selected using the purposive sampling method and a random sampling method was used to select small and medium entrepreneurs in the three local regions. In all, 100 small and medium enterprises were randomly selected and distributed questionnaires to their owners. Samples were taken from these local regions because most small and medium enterprises operate these areas. The self-administered structured questionnaire served as the operational instrument for collecting preliminary data from only 80 respondents out of 100 respondents. Data collected from small and medium industry an entrepreneur was analyzed using multiple regressions analyzes with the help of the Social Sciences Statistics Package (SPSS).

### **Growing Importance of SMEs Innovation:**

In recent times there has been a lot of discussion and research in the corporate world about the phenomenon of "open innovation" around the world. Open innovation is defined as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively. The benefits of opening up innovative processes are widely accepted among large companies in the field of business management and strategic management. However, in the small and medium enterprises (SMEs) of Bangladesh, there is very little discussion about the benefits (and risks) that can be achieved commercially using open innovation processes. The reason is that, open innovation affects small and medium firms individually due to the lack of firm protection and protection of their intellectual property. Bangladesh's SMEs have a growing importance and significance for the innovative capabilities of the economy. SMEs in Bangladesh have increased their R&D budget faster than the largest companies and now play an increasingly important role in the national innovation system as well as national economy.

### **Challenges face by SMEs:**

If the economy of the country is not directed in the right way, then the industry cannot grow. And the basis for the expansion of the industry is that small and medium industries are on the right track in a country. Due to our lack of proper planning, the infrastructure of the industry is not developed. Whether it is small industry and large industry, gas and electricity and water supply have to be regular for its expansion. But at present, the government is unable to supply gas, electricity continuously. Due to the load shedding in the industrial area, the prices of the products produced are increasing, so the competitive market is unable to survive. Moreover, the quality of the product is not maintained. Decision making is associated with that. Despite the efforts to create small and medium enterprises, many lost their interest in making art, including the experience they gained in the industry. Our small and medium industrial face is shaken by the violence of non-profit. Moreover, there is currently a shortage of qualified people in the approval agencies. There are very few people in our country who want small and medium enterprises to set up their own industries. So, most of them have to build an industry with bank loans. But that is a failure in the banking system. This is why most small and medium enterprises are losing interest. There is a lack of diversity in the products produced in small and medium enterprises of Bangladesh. In many cases the foreign market is losing due to the inefficiency of the people who are responsible for increasing the export trade of small and medium industries. There is a lack of diplomatic efforts for small and medium-sized products to be marketed abroad.

Apart from these factors, small and medium enterprises in Bangladesh are facing challenges for the following view of points:

1. Limited and complicated access to finance:

- i. Absence of promotional Schemes (Such as Startup financing, innovative product development etc.)
  - ii. Higher interest rate
2. Absence of skilled manpower:
  - i. Absence of modern machine operators and trouble shooters
  - ii. Absence of qualified manager and innovators
  - iii. Absence of trained designers and researchers
  - iv. Higher education but improper knowledge of working field
3. Use of old machineries:
  - i. Poor quality of products
  - ii. Low productivity
  - iii. Higher cost of production
  - iv. Wastage of raw materials and other resources
4. Lack of product diversity (New product design and Development):
  - i. Same products being saturated over time
  - ii. Small product basket
  - iii. Lack of product diversification
5. Lack of information
  - i. Lack of market access
  - ii. Lack of market share
6. Absence of skills in demand in the market in academic curriculum:
  - i. Unavailability of required skills
  - ii. Absence of product specific manufacturing skill training

### **Benefits of Open Innovation for SMEs:**

It is important for the present-day to see how the companies involved in this industry can gain business benefits by using the open innovation process to the SME industry of Bangladesh. This paper highlights the features that can provide new opportunities for SMEs in the open innovation world:

Smaller companies with robust competences in centered specialties make beautiful collaboration companions for large firms. Indeed, the SMEs' information can speed up the completion time for a large firm's innovation initiative. Moreover, open innovation and open commercialization are characterized by using a community of alliances and long-term offers between special groups

with complementary roles in the price chain. Inter-organizational networks create in this way new commercial enterprise possibility for specialized SMEs.

Platform leaders furnish sizable technical information, co-marketing possibilities and even occasional subsidies for smaller firms' R&D costs.

SMEs are energetic customers of many new applied sciences and may additionally boost essential enhancements for these applied sciences that enhance the pleasant or functionality of a technology. Many giant corporations are keen to be a part of these open innovation communities. It may additionally even serve the functions of giant companies higher to permit the smaller companies to be viewed as the leaders of these communities.

SMEs have a higher capability to specialize than giant industrial enterprises, and this specialization is most superb when markets are extra reachable for progressive operations. Internally equipped things to do are constrained to a single captive consumer in a single market. Open Innovation Operations seeks to construct a couple of clients in more than one market for these progressive operations, spreading the prices and dangers of adoption greater widely.

## **Result and Discussion:**

### **Challenges of SMEs Questionnaire**

This scale was used to measure challenges of SME and the responses were rated on the Likert-scale format, with answers ranging from 1-5 (1= strongly disagree and 5= strongly agree). The psychometric properties of the instrument were evaluated in terms of reliability. Cronbach's alpha values were calculated for all multi-item variables. Cronbach's alpha value of the independent variable "challenges of SME" is 0.753 which fall in the reliability ranges from 0.70 to 0.80; this means that the reliability of independent variable is achieved the level of acceptability (Van Der Wal, 2001).

### **Open Innovation Questionnaire**

This scale was used to measure open innovation and the responses were rated on the Likert-scale format, with answers ranging from 1-5 (1= strongly disagree and 5= strongly agree). The psychometric properties of the instrument were evaluated in terms of reliability. Cronbach's alpha values were calculated for all multi-item variables. Cronbach's alpha value of the dependent variable "open innovation" is 0.763 which fall in the reliability ranges from 0.70 to 0.80; this means that the reliability of dependent variable is achieved the level of acceptability (Van Der Wal, 2001).

## Challenges of SMEs in Bangladesh to Adopt Open Innovation

### Hypothesis 01: Challenges of SMEs in Bangladesh to Adopt Open Innovation

Hypothesis one states that “There is no significant relationship between challenges of SMEs and to adopt open innovation in SMEs of Bangladesh”. This hypothesis object was to determine if challenges of SMEs to adopt open innovation in SMEs in Bangladesh. The result in table 03 exposed to view that challenges of SMEs is significantly (F-ratio = 36.35; 0.00) related to adopted open innovation in SMEs of Bangladesh.

#### i. Model Specification

Mathematically, the model is expressed as follows:

$$\text{Open Innovation (OI)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon$$

Where;

OI= Open Innovation;

$X_1$  = Lack of Information;

$X_2$  = Use of Old Machineries;

$X_3$  = Absence of skilled manpower;

$X_4$  = Limited and Complicated Access to Finance;

$X_5$  = Lack of Product Diversity (New product design and Development);

$X_6$  = Absence of skills in demand in the market in Academic Curriculum;

$\beta_0$  = Regression constant (intercept);

$\beta_1$ ---  $\beta_6$  = Regression coefficients,

$\epsilon$  = Error term

#### ii. Data Analysis and Discussion:

##### a) Descriptive Statistics

Descriptive statistics was conducted to observe the distribution between challenges of SMEs and open innovation data. Table 01 shows the summary of the descriptive statistics.



Table 01: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Challenges of SME</b>	80	4.00	5.00	4.64	0.28
<b>Open Innovation</b>	80	4.00	5.00	4.61	0.31
<b>Valid N (listwise)</b>	80				

**Source:** Survey Data, 2019

The study sample consisted of 80 participants. The independent variable, challenges of SMEs ranged from 4.00 to 5.00 with a mean of 4.64 and a standard deviation of 0.28. The dependent variable, open innovation ranged from 4.00 to 5.00 with a mean of 4.61 and a standard deviation of 0.31.

Table 02: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.866 <sup>a</sup>	0.749	0.729	0.1589

- a. Predictors: (Constant), Absence of skills in demand in the market in Academic Curriculum, Limited and Complicated Access to Finance, Use of Old Machineries, Lack of Information, Lack of Product Diversity (New product design and Development), Absence of skilled manpower
- b. Dependent Variable: Open Innovation

The coefficient of determination is 0.749 which means that the independent variable can explain 74.9% of the variation of the dependent variable. Therefore, about 74.9% of the total variation in the open innovation data is explained by challenges of SMEs. The regression equation appears to be very useful for making predictions since the value of  $R^2$  is greater than 0.5.

#### b) Hypothesis Testing: ANOVA

**Table 03: Analysis of Variance (ANOVA)**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.505	6	0.92	36.35	0.000 <sup>a</sup>
	Residual	1.842	73	0.03		
	Total	7.348	79			

- a. Dependent Variable: Open Innovation. Statistical Significance at 5%
- b. Predictors: (Constant), Absence of skills in demand in the market in Academic Curriculum, Limited and Complicated Access to Finance, Use of Old Machineries, Lack of Information, Lack of Product Diversity (New product design and Development), Absence of skilled manpower

**Source:** Researcher's Field Survey, 2019.

**Table 04: Multiple Regression showing the Challenges of SMEs to Adopt Open Innovation in SMEs of Bangladesh**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.254	.300		.846	.401
	Limited and complicated access to finance	.102	.048	.153	2.110	.038
	Absence of skilled manpower	.203	.073	.237	2.785	.007
	Use of old machineries	.187	.056	.236	3.368	.001
	Lack of product diversity (New product design and Development)	.137	.059	.174	2.335	.022
	Lack of information	.194	.045	.303	4.270	.000
	Absence of skills in demand in the market in academic curriculum	.117	.050	.162	2.354	.021

**Table 04: Multiple Regression showing the Challenges of SMEs to Adopt Open Innovation in SMEs of Bangladesh**

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	Lack of product diversity (New product design and Development)	.137	.059	.174	2.335	.022
	Lack of information	.194	.045	.303	4.270	.000
	Absence of skills in demand in the market in academic curriculum	.117	.050	.162	2.354	.021

**a. Dependent Variable:** Open Innovation. Statistical Significance at 5%

**Source:** Researcher's Field Survey, 2019.

In order to examine the effect of challenges of SMEs to adopt open innovation in SMEs in Bangladesh, multiple regression analysis technique was applied to test the data collected and the result presented on the table 01, table 02, table 03, and table 04 shows above. From table 02 it was observed that the identified challenges of SME as a construct accounted for a total of 74.9% ( $R^2 = 0.749$ ) of adoption open innovation within the period of the study. The model was confirmed with an F value of  $(6, 73) = 36.35$  which was significant at 5% level of significance meaning that the model had the ability of capturing the contribution. This implies that challenges of SME influence to adopt open innovation in SMEs of Bangladesh at 5% level of significant; this result conform to that challenges of SME have positive effect on open innovation.

In determining the effect of *limited and complicated access to finance* while holding the others constant, the study observed that *limited and complicated access to finance* accounted for a variation of 0.102 of the adopting open innovation and this was the lowest value among other at 5% level of significance with t-value of 2.110. This study shows that, small and medium enterprises in Bangladesh are facing financial.

The effect of absence of skilled manpower while holding other factors constant showed a variation of 0.203,  $\beta=0.237$  while t-value is 2.785 at 5% level of significance confirming the model. This result indicates that the absence of skilled manpower is a 1<sup>st</sup> major obstacle to implementing the open innovation process in small and medium enterprises.

The effect of use of old machineries while holding other factors constant showed a variation of 0.187,  $\beta=0.236$  while t-value is 3.368 at 5% level of significance confirming the model. This result indicates that use of old machineries is a 3<sup>rd</sup> major obstacle to implementing the open innovation process in small and medium enterprises.

The effect of lack of product diversity (New product design and Development) while holding other factors constant showed a variation of 0.137,  $\beta=0.174$  while t-value is 3.335 at 5% level of significance confirming the model. This result indicates that lack of product diversity (New product design and Development) is a 4<sup>th</sup> major obstacle to implementing the open innovation process in small and medium enterprises.

The effect of lack of information while holding other factors constant showed a variation of 0.194,  $\beta=0.303$  while t-value is 4.270 at 5% level of significance confirming the model. This result indicates that lack of information is a 2<sup>nd</sup> major obstacle to implementing the open innovation process in small and medium enterprises.

The effect of absence of skills in demand in the market in academic curriculum while holding other factors constant showed a variation of 0.117,  $\beta=0.162$  while t-value is 2.354 at 5% level of significance confirming the model. This result indicates that absence of skills in demand in the market in academic curriculum is a 5<sup>th</sup> major obstacle to implementing the open innovation process in small and medium enterprises.

### **Conclusion:**

In line with the empirical assessment of the existing learn about “Challenges and Benefits of SMEs in Bangladesh to adopt Open Innovation”, there is fantastic relationship between Challenges of SMEs and Open Innovation. The findings of present study revealed that challenges of SMEs (Absence of skills in demand in the market in Academic Curriculum, Limited and Complicated Access to Finance, Use of Old Machineries, Lack of Information, Lack of Product Diversity such as new product design and development, and Absence of skilled manpower) have significant effect on open innovation. The study revealed that absence of skill manpower and lack of information has high beta score than other dimensions with open innovation. Also, according to the results it can be concluded that predictor variables namely (Absence of skills in demand in the market in Academic Curriculum, Limited and Complicated Access to Finance, Use of Old Machineries, Lack of Information, Lack of Product Diversity such as new product design and development, and Absence of skilled manpower) is 74.9% variance of open innovation. Therefore, it is recommended that the government should take the necessary steps in view of the existing challenges of small and medium industries and try to play a role in the socio-

economic development of the country by strengthening the path of development in this industry. Because if the existing problems are solved, small and medium enterprises will develop, only then will the enterprise be sustainable, which will create employment for the youth.

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