

Innovation in Small and Medium Enterprises, Growth of SMEs and Economic Development of Pakistan

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Abstract— This study is to investigate the impact of innovation in SMEs and other related factors on SMEs growth and effects SMEs growth and other related factors on the economic development of Pakistan. Secondary data has been collected; period of 10 years from 2006 to 2015. Linear Log regression model has been constructed by using E-Views software to check the relationship between dependent variables SMEs growth, GDP growth and the independent variables growth rate of per capita as percentage of GDP, patent applications for non-residence, high tech exports, inflation rate, and public expenditure on education as percentage of GDP, trademark total, and value of exports as percentage of GDP. The finding shows significant relationship between all variables of the study on the economic development. The study recommended that there is a need to improve the export, public expenditure on education, patent application for non-residents as well as for the resident, total trade mark application to improve the economic development of Pakistan. The researcher can further work to investigate the impact of innovation in different sectors of Pakistan economy.

Index Terms — Innovation, SMEs growth and economic development

1 INTRODUCTION

SMALL and Medium Enterprises-SMEs plays an important role in economic growth of any country. SMEs create employment opportunities; generate income, help to reduce poverty, improve the standard of living. SMEs In the developing country like Pakistan the growth of Small and Medium size enterprises prove very fruitful. The purpose of the study is to analyze the impact of innovation process on SMEs growth and its effect on economic development of Pakistan. Innovation is an important force in creating and sustaining organizational growth. Effective innovation can mean the difference between leading with a particular product, process, or service—and simply following the pack. Innovation transforms mediocre companies into world leaders and ordinary organizations into stimulating environments for employees (Sullivan, David, & Dooley, 2008).

Small and medium enterprises are considered as backbone for domestic resource mobilization. There are several researches, which are in favor of domestic resource mobilization in the present scenario through either product innovation or process innovation to restore the economic strengths of the economy (Ohashi & Hiroshi, 2007; Soriano, Domingo and Salvador, 2009).

According to SMEDA (Small and Medium Enterprises Development Authority) the SMEs in Pakistan are mostly engaged in the industrial sector which has frequent focus by the Government to boost up the economy and also have an important role through creation of employment and to bring the economic prosperity in the country. The SMEs also considering as a road map for the economic growth of Pakistan through its vital importance in the national economy.

In the industrial development of a country the importance of the SME sector cannot be overemphasized. SMEs constitute

nearly 90% of all the enterprises in Pakistan; employ 80% of the non-agricultural labor force; and their share in the annual GDP is 40%, approximately. However, unlike large enterprises in the formal sector, a small and medium enterprise is constrained by financial and other resources. This inherent characteristic of an SME makes it imperative that there should be a mechanism through which it may get support in different functions of business including technical up gradation, marketing, financial and human resource training & development (Smeda, 2016).

1.1 Problem Statement

Small and medium size enterprises play important role in the economic development of Pakistan through employment creation, generate income, trademark applications total, patent appliance for non-residents, contribution in GDP, contribution in exports.

SMEs are not performed up to the level that is required from it employment, generate income, trademark applications total, patent appliance for non-residents, contribution in GDP, contribution in exports are not increase as much. From last few years this topic has been ignored.

Current study attempts to infer the impact of innovation and other related factors GDP growth rate per capita, public expenditure on education as percentage of GDP, value of exports as percentage of GDP, patent application for non-residents, trademark applications total, high tech exports on SMEs growth and the effect of innovation in SMEs and other related factors growth rate of GDP, share of small and medium enterprises in GDP, patent application for non-residents, inflation, high tech exports, public education expenditure as percentage of GDP on economic development of Pakistan. Using E-Views software built use linear log regression modal to

measure these effects.

1.2 Research Objectives

1. To analyze the impact of innovation and other related factors on SMEs growth in Pakistan.
2. The effect SMEs growth and other related factors on economic development of Pakistan.

1.3 Research Hypothesis

H1: There is a significant impact of innovation and other related factors on SMEs growth.

H2: There is a significant Impact of SMEs growth and other related factors on economic development of Pakistan.

2 LITERATURE REVIEW

SMEs play a key role in transition and developing countries. These firms typically account for more than 90% of all firms outside the agricultural sector, constitute a major source of employment and generate significant domestic and export earnings. As such, SME development emerges as a key instrument in poverty reduction efforts (OECD, 2004).

Policy efforts targeted at SMEs have often been justified with arguments that (i) SMEs are an engine of innovation and growth, (ii) they help reduce poverty as they are more labor-intensive, but (iii) they are constrained by institutional and market failures. While country-level and micro-economic studies have not provided conclusive evidence on these arguments, recent cross-country evidence does not support the claim that countries with a larger share of SMEs in the manufacturing sector grow faster or see their poverty rates fall faster (Thorsten & Asli, 2005).

Small and medium enterprises recognized as an important part for the economic growth in the world. The SMEs has positive impact on the economic growth through employment creation, export of domestic goods, enhances income level of peoples that ultimately increased overall GDP in the country (Qazi, Tahir, & Abdul, 2014).

SME is the major cause of economic growth through creation of employment in the country. They also found the positive impact of SMEs on the economic development in the Bangladesh economy (Moudud, Syed, Issa, & Abdul, 2013).

Kraja and Elez (2013) stated that SMEs were considering an important factor in the Albanian economy through employment generation, poverty reduction. The small and medium enterprises were considering the means of national income and sustainable growth in the developing countries. Manufacturing SMEs in particular contribute significantly to economic growth (Mile, 2010).

Strong evidence regarding the role of SMEs in providing employment both in high-income as well as in low-income countries suggest that SMEs have gotten vital importance around the world during past decades. In every region of the

world, their contribution in economic wellbeing has been strongly realized. More than 95 percent enterprises across the globe are SMEs and they are contributing 60 percent in private sector employment (Ayyagari, Meghana, & Asli, 2011).

According to Organization of Economic Cooperation and Development (OECD, 2000) SMEs constitute the largest proportion of businesses and play significant role in employment generation, creating a better living standard, provision of goods and services, as well as immensely contributing to the gross domestic product in many countries.

3 RESEARCH METHODOLOGY

To measure the effects of innovation in SMEs and other related factors on SMEs growth and SMEs growth and other related factors on economic growth over a period 2006-2015. Construct log linear regression model "E-Views" Software, apply regression, Descriptive statistics, and Granger Causality test. Data collected from different journals, articles, (Worldbank, 2006-2015), (tradingeconomics, 2006-2015), (indexmundi, 2006-2015), (statebank of pakistan, 2006-2015), (Ministry of Finanace, 2006-2015), (SMEDA, 2016). Dependent variables are SMEG, GPG and independent variables are GRPC, PEDUG, VXGDP, PAN, TMT, HTEX, and INF. To know the effects of innovation on SMEs growth, two equations has been used.

$$SMEG = \beta_0 + \beta_1 GRPC + \beta_2 PEDUG + \beta_3 VXGDP + \beta_4 PAN + \beta_5 TMT + \beta_6 HTEX + U$$

Where

SMEG: Share of Small and Medium Enterprises in GDP

GRPC: GDP Growth rate per capita

PEDUG: Public Expenditure on education as percentage of GDP

VXGDP: Value of exports as percentage of GDP

PAN: Patent Application for non-residents

TMT: Trademark Applications total

HTEX: High Tech Exports

$$GDPG = \beta_0 + \beta_1 SMEG + \beta_2 PAN + \beta_3 INF + \beta_4 HTEX + \beta_5 PEDUG + \epsilon$$

Where

GDPG: Growth rate of GDP

SMEG: Share of Small and Medium Enterprises in GDP

PAN: Patent Application for non-residents

INF: Inflation

HTEX: High-Tech Exports

PEDUG: Public Expenditure on education as percentage of GDP

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There are many studies like Khan and Iqbal (2004); Lefebvre & Louis (2002); Fred (2010); Motohashi (2001) which are in favor of positive correlation between growth in small and medium enterprises and GDP growth rate but in case of Pakistan either this positive correlation exists or not.

4 DATA ANALYSIS AND FINDINGS

TABLE 1
DEPENDENT VARIABLE: SMEG
METHOD: LEAST SQUARES

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GRPC	-0.090801	0.016029	-5.664757	0.0109
PEDUG	-0.697636	0.330670	-2.109762	0.1254
VXGDP	-0.487700	0.206976	-2.356306	0.0997
PAN	0.734205	0.259476	2.829571	0.0662
TMT	-0.003604	0.383722	-0.009393	0.9931
HTEX	-0.415871	0.214300	-1.940601	0.1476
C	-1.629793	1.899475	-0.858023	0.4540
R-squared	0.996764	Mean dependent var	1.891304	
Adjusted R-squared	0.990293	S.D. dependent var	0.097195	
S.E. of regression	0.009576	Akaike info criterion	-6.263027	
Sum squared resid	0.000275	Schwarz criterion	-6.051217	
Loglikelihood	38.31513	Hannan-Quinn criter.	-6.495381	
F-statistic	154.0204	Durbin-Watson stat	2.371739	
Prob(F-statistic)	0.000802			

The above table shows significant relation between all coefficients at conventional level. The t-Statistic for Patent application for non-residence is 2.82 show significant relations between pan and SMEs growth. The t-statistic for GDP growth rate per capita is -5.66 show insignificant relations between SMEs growth and GDP growth rate per capita.

TABLE 2
DEPENDENT VARIABLE: GDPG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SMEG	-2.226761	3.302096	-0.674348	0.5371
PAN	0.328467	4.337977	0.075719	0.9433
INF	-0.399596	0.405185	-0.986206	0.3799
HTEX	0.954823	3.348979	0.285109	0.7897
PEDUG	-3.220017	2.575267	-1.250363	0.2793
C	4.038189	20.49676	0.197016	0.8534
R-squared	0.476834	Mean dependent var	0.505187	
Adjusted R-squared	-0.177122	S.D. dependent var	0.176256	
S.E. of regression	0.191230	Akaike info criterion	-0.186973	
Sum squared resid	0.146275	Schwarz criterion	-0.005422	
Loglikelihood	6.934863	Hannan-Quinn criter.	-0.386134	
F-statistic	0.729153	Durbin-Watson stat	2.864112	
Prob(F-statistic)	0.637641			

Above table shows positive relation between High Tech Export and GDP growth rate. As shown in the table statistic for high tech exports 0.2851 show significant relation of HTEX and GDP growth. The value of D-W statistic 2.86 shows there is no autocorrelations in the analysis.

TABLE 3
PAIRWISE GRANGER CAUSALITY TEST
Sample: 2006-2015
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GDPG does not Granger Cause SMEG	8	3.70971	0.1545
SMEG does not Granger Cause GDPG		1.01613	0.4603

The results of table-3 infer that economic growth causes to move growth rate of small medium enterprises based on F-Statistics value 3.709

TABLE 3
SUMMARY STATISTICS

	VXGDP	TMT	SMEG	PEDUG	PAN	HTEX	GRPC
Mean	1.111228	6.588004	1.891304	0.368428	6.093276	0.257469	0.251354
Median	1.122045	6.580980	1.891345	0.351125	6.064930	0.256195	0.223260
Maximum	1.150140	6.714330	2.035810	0.439330	6.233780	0.323450	0.494850
Minimum	1.039410	6.496430	1.739730	0.301020	5.999370	0.194510	-0.211200
Std. Dev.	0.033004	0.084296	0.097195	0.050293	0.082201	0.041088	0.234109
Skewness	-0.913815	0.225474	-0.064344	0.178850	0.638492	-0.192884	-0.526931
Kurtosis	3.214968	1.470465	1.751057	1.448345	1.971467	2.346680	2.416299
Jarque-Bera	1.411019	1.059513	0.656842	1.056493	1.120238	0.239852	0.604722
Probability	0.493857	0.588748	0.720060	0.589638	0.571141	0.886986	0.739071
Sum	11.11228	65.88004	18.91304	3.684280	60.93276	2.574690	2.513540
Sum Sq. Dev.	0.009803	0.063953	0.085022	0.022764	0.060813	0.015194	0.493261
Observations	10	10	10	10	10	10	10

Patent Application has significant on economic development. In developing country like Pakistan patent application for resident are very small as compare to non-residence. In Pakistan need to improve patent application for residence because PAN positively impact on economic development.

Interpretation

Table-1 shows result s in relation between innovation process and SMEs performance. All coefficients show significant relation at conventional level. If export increase as percentage of GDP then SMEs show significant growth. There is significant relationship between Patent Application for non-resident and Growth of SMEs. Patent application for non-resident and trademark total the two main variable of the study show significant impact of SMEs growth. R-Squared is 0.966 dependent variables show that the independent variable measure 99.6% to dependent variables.

Table-2 shows the significant relation between SMEs growth and GDP growth. All coefficients are significant at conventional level. There is significant relationship between High Tech exports and GDP growth as in the table the value of high the export t-statistic is 0.2851 show positive relations with GDP. Government should made effective policies to promote

exports in the country.

There is general perception there is negative relation between inflation and GDP. Inflation cause increase in prices, decrease in consumption and decrease in consumption show decrease in GDP and GDP per capita will also decrease.

6 CONCLUSION AND RECOMMENDATIONS

The purpose of the study is to analyze the impact of innovation on SMEs growth and its effects economic development of Pakistan. To achieve these objectives Log regression model have been used to see the effect of innovation in SMEs on economic development.

To measure the process innovation, Patent applications, residents or nonresidents, Trademark applications, direct nonresident or resident, High-technology exports (current US\$) and High-technology exports as a percentage of manufactured exports are used as key indicators. E.Veiws software use to measure the effects of innovation in SMEs on economic development over a period 2006-2015. There is significant relation between high tech exports and growth of GDP. Government of Pakistan should work to improve the exports of the country because improvement in exports leads to economic growth.

Based on the finding of this study, following conclusion is made. Pakistan is a developing country for the growth of economy it is needed to improve the exports, patent application for residence, properly utilize the natural recourses for industrial development. The growth of small and medium size enterprises Show significant relation between SMEs growth and economic growth. Improvement in public expenditure of education the share of SMEs in GDP will also increase

There is significant relationship between Patent Application for non-resident and Growth of SMEs. Patent application for non-resident and trademark total the two main variable of the study show significant impact of SMEs growth. Researcher may further research to examine the impact of innovation on different sector of economy of Pakistan. Researcher may further research to examine the impact of innovation on different sector of economy of Pakistan.

6.1 Limitations of Study

- This study emphasize on secondary data, due to non-availability of the data not all possible to include all variable use by (Egils & Nicholas, 2005) to measure the process of innovation.
- Variable use in this study based on the past studies, no new variable used to measure the innovation process in SMEs and its effects on economic growth.
- Shorter study period from 2006-2015.

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