Small and Medium Scale Enterprises: Their Role in Economic Growth of Nepal

Mukti KC[13]

Abstract

Small and medium scale enterprises (SMEs) have historically played an important role in contributing to economic growth and development. Naturally, all businesses start as small businesses or even start out of small businesses initiated by individuals. It is imperative to give high priority to Nepalese labor, skill and raw material based domestic investments to promote national level industries for achieving economic growth in the course of SMEs. This study has used Johansen Cointegration, Vector Error Estimates (VAR) and Granger Causality test to investigate relative changes in the position of the Nepalese SMEs and investment to the real GDP since 1989 and 2018 based on secondary data regarding regression analysis. It has examined the dynamic relationship among the total SMEs and investment with real GDP of Nepal and found to be significant and positive relationship in between investment and real GDP of Nepal while insignificant and inverse relationship in between total SMEs and real GDP of Nepal. It implies that real GDP was seemed to be mostly influenced by investment rather than number of SMEs. However, it was and still is contributing significant role in economic growth in Nepal.

Keywords: small and medium scale enterprises, economic growth, investment, regression, cointegration

Introduction

According to the study of Katua, economic growth in developed countries such as Japan, Korea, Taiwan and many others, was significantly generated by SME activities. The percentage contribution of SMEs to Gross Domestic Product (GDP)/total value-added ranges from 60.0 percent in China, 57.0 percent in Germany, 55.3 percent in Japan and 50.0 percent in Korea, compared to 47.3 percent attained by Malaysia. Accordingly, SMEs have also played a very important role in the economic development of China. At present, there are more than 10 million of SMEs comprising 99 per cent of the total

---

[13] KC is Lecturer Department of Economics, Trichandra Campus, TU.
Email: muktikc01@gmail.com

number of enterprises in China. SMEs contribute 60 per cent of industrial output volume and 40 per cent of the total taxes and profits realized by enterprises in China. The contribution of SMEs in output in Japan is 65 per cent, Germany 48 per cent while in USA its 45 per cent. SMEs in the US generate more than half of the nation's gross domestic product (GDP) (Katua, 2014).

There have been the many empirical researches that examine the influence of SMEs on the economic growth in the global context. But in Nepalese context there have been a few empirical researches that examine the influence of SMEs on the growth and employment based on descriptive analysis. Development of Industry sector especially SMEs are very much necessary to reorient the economy towards the path of prosperity. It is imperative to give high priority to Nepalese labor, skill and raw material based domestic investments to promote national level industries for achieving national economic growth in the course of SMEs as per the spirit of the Constitution of Nepal. So, public, private, and cooperative sectors need to be mobilized through SMEs to achieve industrial growth. That's why this study investigates the roles of the SMEs in economic growth broadly.

Review of Literature

Industrial development started in Nepal with the establishment of Industrial Council in 1936 A.D. and The Gharelu Illam Prachar Adda was established in 1940. Raghupatti Jute Mills was established in 1946, which is regarded as the first modern industry in Nepal. Similarly, the process of planned industrialization started with the launching of the First Five Year Plan in 1956 A.D. gradually, a number of medium and large-scale industries such as cigarette, sugar, cotton, cement, bricks, and paper industries were established in the public sector (Khatri, 2019).

Sampath & Gunawardana (2015) response to the winds of change world over regarding Sri Lanka, as a result of rapid advance in science and technology. It has strengthened the SMEs to make use of themselves as engines of their economy in the sphere of production as a whole economy as well as increase of production and competition in the market. This situation is improved as a result of consumer demand. It creates opportunities to maximize production to satisfy customer needs and SMEs do not

consider the factors that affect environment during manufacturing process, selling and distribution and consumption stages.

Katua (2014) claimed that SME sector has widely been accepted as the engine of economic growth and poverty eradication in the world. However, the meaning of an SME has remained different across countries and to different sectors in the same country. A small industry can be set up with small capital and can produce goods for domestic consumption by using labor intensive technology. SMEs play a significant role in the development and growth of various economies. SMEs are vital for world prosperity. Collectively SMEs are the largest employers and greatest creators of wealth. Through job and wealth creation SMEs help alleviate poverty. SMEs therefore hold the key to achievement of national economic objectives of employment generation and poverty reduction at low investment cost as well as the development of entrepreneurial capabilities including indigenous technology. The labor intensity of the SMEs sector is much higher than that of the large enterprises therefore SMEs have a great potential in contributing to the achievement of growth and employment.

Chowdhury & et al. (2013) analyzed the potential of SMEs in the economy of Bangladesh. Data were collected from 100 SME units by using simple random technique. A structural questionnaire was developed to get the responses from different SME units in the country. SMEs have special significance for poverty reduction programmes and potential contribution to the overall industrial and economic growth in Bangladesh.

Zaied (2012) predicted e-commerce has been a new driver of economic growth for developing countries. Where, SME sector plays a significant role in its contribution to the national economy in terms of the wealth created and the number of people employed. SMEs in Egypt represent the greatest share of the productive units of the economy and the current national policy directions address ways and means of developing the capacities of SMEs. Ramanathan & et al. (ed.) (2011), SMEs sector is recognized for its contribution to employment, innovation and economic dynamism, and is considered as an engine of growth and an essential part of a healthy economy. Recognizing the distinctly positive impact of small enterprises on the economy, the governments of many industrially advanced countries have taken several policy initiatives for the growth and expansion of SMEs, and for improving their technological capability and market

competitiveness. Indigenous SMEs in developing countries are facing intensifying competition in their local markets due to globalization, increasing liberalization and the entry of multinationals through foreign investment.

Ghimire (2011) observed the status of micro enterprises, cottage and small-scale industries in Nepal and analyzed their contribution in the economy. This study finds out Least Developed Countries like Nepal where, MSEs is contributing to the economy through employment generation, creation of added value, GDP, export activities etc. It is based on empirical evidence drawn from the publication of government policies, report of department of cottage and small industries, Economic Survey, data available from Federation of Handicraft Association of Nepal and various relevant articles.

Kongolo (2010) examines SMEs have historically played an important role in contributing to economic development of many countries around the world. Naturally all businesses start as small businesses or even start out of small businesses initiated by individuals. This study shows that SMEs represent vast portion of businesses in developing countries including South Africa. In South Africa, SMEs account for about 91% of the formal business entities, contributing to about 51 to 57% in GDP, providing almost 60% of employment and enhance as well as support economic development in South Africa.

As a study of Vengrauskas et al. (2007), define the influence of SMEs to the national economy of Lithuania. According to this study the experience of the EU member states and other developed countries disclosed that the small and medium-sizes business development promotes competitiveness and consequently, the growth of the economy. As their study SMEs determines all the changes of the supply-demand in the market, is quick to adjust itself to them, to create new workplaces in the areas where certain products and services are in greatest demand in the specific period of time.

As a study of Chen (2006), explores development history of Chinese SMEs over the past two decades and Chinese SMEs have three development phases, along with the development of China's reform. The first phase was from 1978 to 1992, characterized by the expansion of SMEs in number and scale. This resulted from the government's encouragement of and support for the development of township, collective and self-employed enterprises. The quick expansions of SMEs have made great contribution to

economic development and improvement of the living standard of people. Similarly, the second phase was from 1992 to 2002. During this period, the reform of state-owned SMEs and the development of non-public sectors had given more emphasis. To speed up reforms of state-owned SMEs Chinese government implemented various measures, such as restructuring, merger and acquisition, joint partnership, leasing, contracting, sell-off and to reduce the state's ownership in SMEs. At the same time private-owned SMEs have the benefited of rapid development along with the establishment of the socialist market economy. This phase was an imperative historical period for the development of Chinese SMEs. Accordingly, the third phase began with 2002, whereas, China further developed the SMEs, which symbolized that the developments of SMEs have led in a new era and these sectors contribute significantly for economic growth.

According to the study of OECD (2004), Small and medium-sized enterprises (SMEs) are a very heterogeneous group. SMEs are found in a wide array of business activities, ranging from the single artisan producing agricultural implements for the village market, the coffee shop at the corner, the internet café in a small town to a small sophisticated engineering or software firm selling in overseas markets and a medium-sized automotive parts manufacturer selling to multinational automakers in the domestic and foreign markets. The owners may or may not be poor; the firms operate in very different markets (urban, rural, local, national, regional and international); embody different levels of skills, capital and sophistication for growth orientation and may be in the formal or the informal economy.

Research Methodology

Conceptual Framework

The theoretical approach to studying the relationship between the SMEs and economic growth provided by the development theory and followed by the World Bank model which is used to describe the relationship of SMEs and economic development. This is expressed as

Conceptual Framework

Independent Variables
•Number of SMEs
•Capital Investment

→ **Economic Growth (RGDP)**
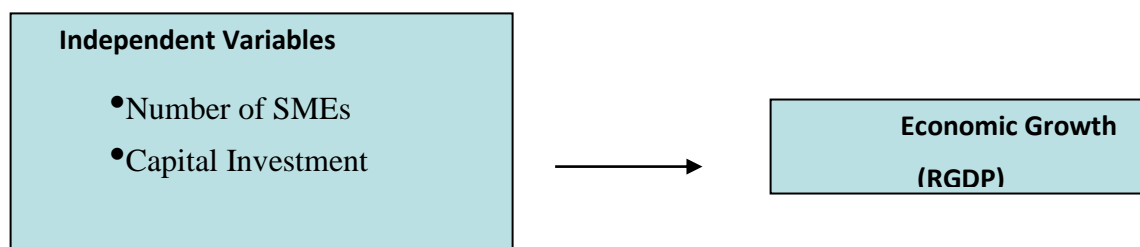
It is widely accepted that increase in SMEs of in an economy leads to increase economic growth (the World Bank, 2011). So, GDP growth is a function of number of SMEs and capital investment. It means that economic growth has found a positive relationship with number of SMEs and capital investment.

Therefore, this relationship can be explained as the following model:

LNRGDP = f (LNTSMEs, LNTINV)

In equation form this can be written as:

$$LNRGDP = \beta_0 + \beta_1 \, LNTSMEs + \beta_2 \, LNTINV + \varepsilon$$

Where, variables LNRGDP, LNTSMEs and LNTINV denote the log values of real economic growth i.e., RGDP, number of SMEs and capital investment respectively. The expected signs of the coefficients of the variables are:

$\beta_1 > 0$ and $\beta_2 > 0$.

Data and Literature for the Study

A secondary method of data collection is employed for the study and compromise of yearly observations of macroeconomic variables. Data on macroeconomic variables for sample period is obtained by annual data for 1989 to 2018 AD from Ministry of Industry, Commerce and Supplies as well as Ministry of Finance and Central Bureau of Statistics (CBS). Literature for the study is obtained from Journal of Finance, American Economic Review, Economic Surveys, The Financial Review, IMF working papers, The Economic Journal of Nepal, Economic Journal of Development, Economic Review: Occasional Paper (Nepal Rastra Bank), FNCCI, NPC, Ministry of Industry, Finance, other journal articles and working papers from Google scholar.

Methods and Tools for the Data Analysis

This study attempts to examine the relationship among the SMEs and the economic growth. Hence an ex post facto research design is utilized. The data collected is categorized; tabulated, processed and analyzed using different methods. Descriptive statistics such as Frequency, Mean, Standard Deviation, Maximum, Minimum, Skewness, and Kurtosis were used to provide summary information about the distribution, variability and central tendency of a variable regarding Johansen Cointegration, Vector Error Correction Model (VECM) and Granger Causality test with regression analysis. The study is employed graphs to obtain the relationship between macroeconomic variables (RGDP) and the SMEs beyond the study period.

Model Specification

In the light of above discussion, this study investigates SMEs, investment and their relationship with economic growth in Nepal. As other researchers have made in this field for other countries, this study selects the state variables that are of economic interest and that has been widely used in SMEs literature. Hence, study runs regression of the form:

GDP = f (SME)

I.e. RGDP = a + b_1 X_1 + b_2 X_2 + e …………….(1)

Where, RGDP = Real GDP Growth of Nepal.

b_1 and b_2, are coefficients

X_1 = Number of SMEs (Total SMEs)

X_2 = Investment on SMEs

e = Error

In this model, a real GDP (at 2001/02 prices) is used as the measure of real economic activity. GDP is constructed and published annually by Central Bureau of Statistics (CBS) and is available from 1964/65. Here, it is collected from Economic Survey, Ministry of Finance. Similarly, the SMEs used the compilation data of small and medium scale enterprises (i.e., total number of SMEs). It is based on data bank of department of industry and industrial statistics of department of industry, Ministry of

Industry, Commerce and Supplies, planning, monitoring and industrial statistics section, Tripureshwar, Kathmandu.

Accordingly, capital investment is used as the measure of the investment fund for SMEs because it is required for operation and is available in annual series. It is also available in industrial statistics of department of industry. All variables are transformed into natural log as mentioned in Conceptual Framework to stabilize the variance of the series over time by using OLS regressions to estimate with standard errors.

Empirical Outcomes of the Study

This study examines the dynamic relationship between the real GDP along with total number of SMEs and capital investment for the SMEs over the period of 1989 to 2018.

Correlogram Test of Concerned Variables

A visual plot of the data is usually the first step in the analysis of any time series. So, on the basis of EViews software diagrams of concerned variables are derived. The impressions of these graphs seem to be "trending" upward and downward, albeit with fluctuations.

Figure 1

Visual Plot of Level Data
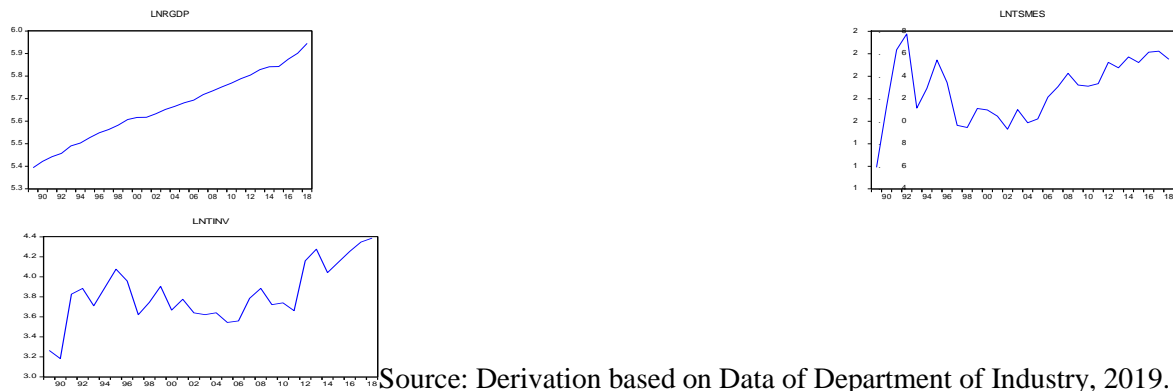
Source: Derivation based on Data of Department of Industry, 2019.

The log values of concerned variables economic growth (i.e., RGDP), total investment in SMEs, and total number of SMEs are termed as LNRGDP, LNTINV and LNTSMES. The derived Path of all-time series variables (Figure 1) have been increasing. It is showing an upward trend, suggesting that the mean of these variables is changing. So, this implies that these series/ variables are not stationary.

Figure 2

Visual Plot of Second Difference of Concerned Variables
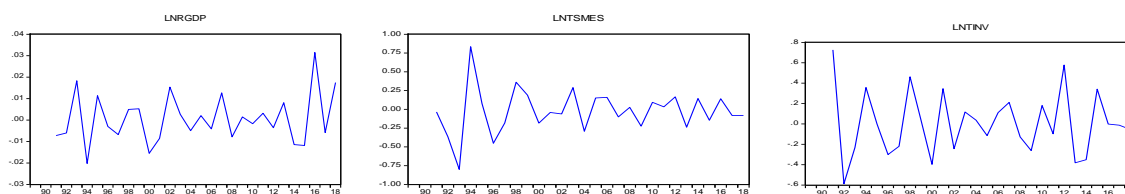
Source: Derivation based on Data of Department of Industry, 2019.

One of the tests of stationarity is based on the autocorrelation function (ACF). The ACF at lag k plotted as above, which is known as the population Correlogram. Figure 2 of the ΔLNRGDP (dlRGDP) and other time series over the period of study have been fluctuating and that is not showing a trend, suggesting that the mean of these variables is not changing. So, it suggests that these series are stationary.

Summary Statistics

The summary report of Mean, Median, Standard Deviation, Maximum, Minimum, Skewness, Kurtosis, Jarque-Bera, Probability and Sum of Square of Deviation explains synopsis about the distribution, variability and central tendency of a variable.

Table 1

Summary Statistics

Variables	LNRGDP	LNTSMES	LNTINV
Mean	0.000243	-0.021824	0.004333
Median	-0.000395	-0.037800	-0.006880
Maximum	0.030496	0.833688	0.726705
Minimum	-0.023260	-0.799190	-0.587310
Std. Dev.	0.011314	0.294980	0.314984
Skewness	0.359606	0.166554	0.404090
Kurtosis	3.624077	5.059956	2.653950
Jarque-Bera	1.057862	5.080110	0.901723
Probability	0.589234	0.078862	0.637079
Sum	0.006812	-0.611082	0.121337
Sum Sq. Dev.	0.003456	2.349355	2.678810

Source: Author's Construction by using EViews 9 software.

According to the above Table 1 the mean and median of LNRGDP and LNTINV are almost different. The standard deviations indicate that LNTINV is highly volatile while LNRGDP is less volatile. The largest and lowest values are 0.833688 and -0.023260. The variable shows positive Skewness of all variables indicating the higher probability of

very large positive economic growth. Similarly, the kurtosis shows that it is platykurtic (fat or short tailed) with lower-than-normal kurtosis (that is K>3), which means that there is a higher probability than usual for extreme values (very good or very bad growths) to occur. The combination of these presents the normal distribution of the variable as indicated by the JB test of normality.

Correlation Matrix

The correlation matrix of Table 2 shows that there is strong correlation between the ΔLNRGDP and other variables.

Table 2

Correlation Matrix

Variables	LNRGDP	LNTSMES	LNTINV
LNRGDP	1.000000	0.193934	0.150892
LNTSMES	0.193934	1.000000	0.502423
LNTINV	0.150892	0.502423	1.000000

Note: This table displays the correlation of concerned variables for the sample period 1989 to 2018. The concerned variables ΔLNRGDP, ΔLNTSMES and ΔLNTINV denote second difference of log values of real gross domestic product of Nepal, total SMEs and total investment.

Cointegration

A linear combination of log of Real Gross Domestic Product (LNRGDP) of Nepal, total number of SMEs (LNTSMES) and total investment on SMEs (LNTINV) can be stationary despite being individually non-stationary. Cointegration of two (or more) time series suggests that there is a long-run equilibrium relationship between them (Gujrati, 2003). So, it was employed to examine the dynamic relationship between real economic growth (LNRGDP) and other variables.

Augmented Dickey-Fuller Test

According to ADF results of second difference, absolute calculated value of 'T' is more than absolute value of T at 1%, 5% and 10% in both cases with drift as well as with drift and trend. So, the null Hypothesis is rejected at 1%, 5% and 10%. It implies that there is no Unit Root problem (i.e. they are stationary). Similarly, p-values of second difference are also significant in both cases of intercept as well as trend and intercept. Similarly, for intercept only and both intercept and trend, the ADF test performed on the second differences of the variables, suggests that all variables are integrated of order, I (2). In other

hand, ADF results of level data shows a Unit Root Problems and first difference has mixed results.

Table 3

Augmented Dickey-Fuller Test

For Level Data Variables	Intercept (Tc)		Intercept + Trend (Tct)	
	T-Statistics	P-Values[*]	T-Statistics	P-Values*
LNRGDP	0.346842	0.9768	-1.637804	0.7525
LNTSMES	-1.554493	0.4902	-3.269218	0.0914
LNTINV	-2.110843	0.2420	-2.627448	0.2718
For First Difference				
LNRGDP	-4.109396	0.0036	-3.978786	0.0216
LNTSMES	-1.812591	0.3660	-2.162687	0.4884
LNTINV	-6.819941	0.0000	-3.011839	0.1488
For Second Difference				
LNRGDP	-8.099297	0.0000	-8.258104	0.0000
LNTSMES	-12.77081	0.0000	-4.431923	0.0092
LNTINV	-5.271750	0.0003	-5.370593	0.0012

[*]MacKinnon (1996) one-sided p-values.

Test critical values: For 1% level (-3.699871), 5% level (-2.976263) and 10% level (-2.627420).

Source: Author's ADF test for the sample period 1989 to 2018 & Significant at the 1- percent level.

Vector Autoregression (VAR)

Vector Autoregressive (VAR) model allows the feedback or reverse causality among   the dependent and independent variables using their own past values. In the general VAR model, no exogenous variables require as it assumes all the variables endogenous.

Table 4

Vector Autoregression Estimates

Standard Errors in ( ) & T-Statistics in [ ]			
	LNRGDP	LNTSMES	LNTINV
LNRGDP(-1)	-0.612477	-5.476631	-6.331014
	(0.16474)	(5.26085)	(4.21154)
	[-3.71778]	[-1.04102]	[-1.50325]
LNRGDP(-2)	-0.743644	1.164819	0.113545
	(0.18638)	(5.95183)	(4.76471)
	[-3.98992]	[0.19571]	[0.02383]
LNTSMES(-1)	-0.005672	-0.375908	0.314547
	(0.00741)	(0.23671)	(0.18950)
	[-0.76514]	[-1.58803]	[1.65988]
LNTSMES(-2)	0.003767	-0.353443	0.000326
	(0.00689)	(0.22008)	(0.17618)
	[0.54657]	[-1.60600]	[0.00185]
LNTINV(-1)	-0.000605	0.140607	-0.712743
	(0.00821)	(0.26218)	(0.20989)
	[-0.07364]	[0.53630]	[-3.39585]
LNTINV(-2)	0.010658	-0.311687	-0.667669
	(0.00714)	(0.22787)	(0.18242)
	[1.49352]	[-1.36781]	[-3.66001]
C	-0.000130	-0.014112	-0.003402
	(0.00159)	(0.05073)	(0.04061)
	[-0.08172]	[-0.27819]	[-0.08379]
R-squared	0.631044	0.439519	0.557178
Adj. R-squared	0.514531	0.262525	0.417340
Sum sq. resids	0.001224	1.248089	0.799865
S.E. equation	0.008026	0.256298	0.205178
F-statistic	5.416098	2.483242	3.984440
Log likelihood	92.63714	2.581881	8.365915
Akaike AIC	-6.587472	0.339855	-0.105070
Schwarz SC	-6.248754	0.678574	0.233648
Mean dependent	0.000346	-0.008165	-0.000695
S.D. dependent	0.011519	0.298450	0.268797
Determinant resid covariance (dof adj.)	8.66E-08	Log likelihood	112.9579
Determinant resid covariance	3.38E-08	Schwarz criterion	-6.057533
Akaike information criterion	-7.073688		

Source: Author's Construction by using EViews 9 software.

*Significant at the 1-percent level

According to above mentioned Table 4 VAR estimates do not present the p-values for testing the corresponding parameters (in Eviews). So, on the basis of T-Statistics, the study is determined whether or not a lagged variable has a significant adjusted effect on the corresponding dependent variable. Both first- and second-year lag change in LNRGDP is significant. Similarly, first- and second-year lag change in LNTSMES and LNTINV are insignificant and positively affects to the real GDP in a first lagged while

inversely affects to the real GDP in a second lagged. It means universally SMEs and their output have significant impact on economic growth due to easy access of resource utilization even in their own localities.

Residual Autocorrelation Test

Residual LM test has been presented on the above VAR estimation to examine if there is any serial correlation in residuals. Generally, existence of serial correlation violates the OLS assumption. Here, Table 5 presents the VAR residual serial correlation LM tests. The LM –statistics cannot reject the null hypothesis of no serial correlation up to lag lengths of six. Hence, the model satisfies the OLS assumptions.

Table 5

VAR Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order 6		
Lags	LM-Stat	Prob
1	28.12309	0.0009
2	24.60512	0.0034
3	14.48589	0.1061
4	8.131855	0.5209
5	11.10182	0.2688
6	4.765191	0.8543

Probs from chi-square with 9 df.

Source: Author's Construction by using EViews 9 software.

Johansen Test for Cointegration

Engle and Granger (1987) determined that a linear combination of two (or more) non-stationary time series may be stationary and suggests that there is a long-run equilibrium relationship between them if they are co-integrated. Therefore, linear combination of real GDP, total SMEs and total investment time series can be stationary despite being individually non-stationary. So, it was employed to examine the dynamic relationship between these three variables. For this study, the Johansen (1991) Cointegration test is used by using EViews 9 software since it has been shown to have good finite model.

Table 6

Johansen Test for Cointegration

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.901082	118.1472	29.79707	0.0000
At most 1 *	0.706615	57.99708	15.49471	0.0000
At most 2 *	0.633731	26.11408	3.841466	0.0000

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.901082	60.15012	21.13162	0.0000
At most 1 *	0.706615	31.88300	14.26460	0.0000
At most 2 *	0.633731	26.11408	3.841466	0.0000

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's Construction by using EViews 9 software.

Above mentioned Table 6 shows that the critical values of both trace and maximum Eigenvalue tests reject the null hypothesis of no cointegrating relation at 5% level of significance. MacKinnon p-values of both tests are significant. Similarly, both trace and maximum Eigenvalue tests indicate 3 cointegrating equations at 5% level. Therefore, the long-run equilibrium relationship between RGDP, total SMEs and total investment time series can be established despite being individually non-stationary. However, according to ADF test, they all are stationary at second difference (at Table 3).

Granger Causality Tests

Granger causality is a way to investigate causality between two variables in a time series. It is closely related to the idea of cause and effect, although it is not exactly the same. A variable X is causal to variable Y if X is the cause of Y or Y is the cause of X.

Table 7

Pair Wise Granger Causality Tests

Null Hypothesis:	F-Statistic	Prob.
LNTSMES does not Granger Cause LNRGDP	0.63831	0.4322
LNRGDP does not Granger Cause LNTSMES	0.20902	0.6516
LNTINV does not Granger Cause LNRGDP	1.38061	0.2515
LNRGDP does not Granger Cause LNTINV	0.06179	0.8058
LNTINV does not Granger Cause LNTSMES	0.16641	0.6869
LNTSMES does not Granger Cause LNTINV	0.57254	0.4566

Source: Author's Construction by using EViews 9 software.

Above mentioned Table 7 shows that the main results obtained from the Pair wise Granger-causality analysis where six pairs of variables are considered as economic indicators. According to results there is no causality existing between RGDP, Total Investment and Total SMEs.

The Model

A linear combination of real GDP of Nepal, Total Investment and Total SMEs of Nepal, that generates in study period time series can be stationary (in the face of being individually stationary mentioned in above ADF test). For this purpose, EG test is used to test for cointegration. Cointegration of two (or more) time series suggests that there is a long-run equilibrium relationship between them. So, it was employed to examine the dynamic relationship between these variables. The following steps were followed in this regard:

$$\text{LNRGDP} = 4.296531 - 0.062779\text{LNTSMES} + 0.396239\text{LNTINV} + 0.130005$$

P-values $(0.0000)^*$ (0.6435) $(0.0041)^*$

*Significant at the 1-percent level and

Table 8

Regression Statistics

R-squared	0.403184	Mean dependent var	5.671345
Adjusted R-squared	0.358976	S.D. dependent var	0.162377
S.E. of regression	0.130005	Akaike info criterion	-1.147842
Sum squared resid	0.456338	Schwarz criterion	-1.007722
Log likelihood	20.21762	Hannan-Quinn criter.	-1.103016
F-statistic	9.120052	Durbin-Watson stat	0.338914
Prob(F-statistic)	0.000942		

Source: Author's Construction by using EViSews 9 software.

Here, overall model is significant as Prob. (F-Statistic) is equal to 0.000942. However, 40.32 % of total variation is explained by the model. Similarly, Standard Error of Estimate Regression (SEE) i.e., 0.130005 is lower than Standard Deviation of dependent variable i.e., 0.162377, implies that less errors in above computed coefficients. Thus, the estimates of the model are reliable and should be taken with confidence.

The above estimated cointegration relationship of OLS equation shows that total investment has significant and direct relationship with the real GDP while total SMEs has insignificant and inverse relationship with real GDP. So, this finding implies that industrial policy of Nepal has positive impact on real GDP and the positive relationship causes increase in total investment increases real GDP and thereby increases economic growth of Nepal. On the contrary, industrial policy of Nepal has no effective impact on real GDP through number of SMEs causes increase in SMEs decreases real GDP. It means increase in SMEs causes inflation (Generally, they are not based on domestic raw materials) and effect real income.

Discussion

On the basis of regression analysis of 30 year's observations, there is significant and direct relationship in between total investment on SMEs and real GDP of Nepal. The value of the coefficient (β_2) total investment is 0.4, which shows that, a change in the total investment leads to change in real GDP by 0.4. Similarly, there is insignificant and inverse relationship in between total SMEs and real GDP of Nepal. The value of the coefficient (β_1) total SMEs is 0.063, which shows that, a change in the total SMEs leads to change in real GDP by 0.063.

The results of t-statistics and p-value are also significant, which shows that results of coefficient is to be accept with 99 % degree of confidence. R-square (R^2) = 0.40, there is strong correlation exists between dependent variable (Real GDP) and its explanatory variables (Total Investment and Total Number of SMEs). The value of R^2 indicates that 40% variation in dependent variable has been explained by variation in independent variables.

Accordingly, the LM –test implies that no serial correlation up to lag lengths of six and VAR estimates implies that LNTSMES and LNTINV are insignificant and positively affects to the real GDP. However, the Johansen cointegration test both trace

and maximum Eigenvalue indicate 3 cointegrating equations at 5% level. Therefore, the long-run equilibrium relationship exists between RGDP, total SMEs and total investment. Accordingly, the results there are no causality existing between RGDP, Total Investment and Total SMEs.

This study is based on only the relationship between real GDP and total investment as well as number of SMEs, and does not include other control variables. So, there is space for further study by including other control variables.

The outcome of the study benefits both the investors and the regulators of SMEs. For the investors, the study helps in predicting the SMEs and their contribution on economic growth from key economic analysis. On the other hand, the regulators of the SMEs (for instance Department of Industry, Ministry of Industry and Finance along with Nepal Rastra Bank) are able to assess the implication of different key elements for the development of the SMEs and thereby able to formulate correct policy relating to the SMEs. Furthermore, general investors became aware of economic fundamentals impact on the SMEs and thereby help in reducing the external activity and non-rational behavior on the SMEs.

Conclusion

This study examines the relationship among the total SMEs and the total investment real domestic activity (real gross domestic product) for the Nepalese economy. The existence of such a relationship is however be consistent with the model/process are being used by the World Bank. SMEs in Nepal play a significant role in an economic prosperity of the country because of it stimulate private ownership and entrepreneurial skills along with broad based sources of growth and employment. At the same time, it is also acting as incubators for developing domestic enterprises into large corporations. However, SMEs contribution to the Nepalese economy is still relatively small. In recognition of this, the Nepal government put priority to develop SMEs sectors.

References

Ayyagari, M., Demirguc-Kunt, A. & Maksimovic, V. (2011*). Small vs. young firms across*

the World contribution to employment, job creation & growth (policy research working paper No. 5631). https://econ.worldbank.org. pdf

Chowdhury, Md. S. A., Azam, Md. K. G. & Islam, S. (2013). Problems & prospects of SME financing in Bangladesh. *Asian Business Review*, 2, (4), 1-15.

Chen, J. (2006). Development of Chinese small and medium-sized enterprises. *Journal of Small Business and Enterprise Development,* 13, (2), 140-147. www.emeraldinsight.com/1462-6004.htm.

Engle, R. F. & Granger, C. W. J. (1987). Cointegration and error correction: representation,

estimation and testing. *Econometrica,* 55 (2):251-76.

Ghimire, R. (2011). Micro & small enterprises in Nepal: Prospects & challenges. *Journal of Finance and Management Review, 2*(2), 257-269. https://www.researchgate.net/publication/256021098.

Gujarati, D (2003). *Econometrics*. Singapore: McGraw-Hill.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica*, 59 (6), 1551-80.

Katua, Ngui Thomas (2014). The role of SMEs in employment creation & economic growth in selected countries. *International Journal of Education & Research, 2* (12), 1-13. www.ijern.com.

Khatri, M.B. (2019). Small and Medium Scale Enterprises and their Role in Employment Generation in Nepal. *Tribhuvan University Journal*, 33, 129-140. https://doi.org/10.3126/tuj. v33i1.28688.

Kongolo, M. (2010). Job creation versus job shedding & the role of SMEs in economic development. *African Journal of Business Management, 4*(11), 2288-2295 http://www.academicjournals.org/AJBM.

Ministry of Industry. (1992). *Nepal industrial policy, 1992*. Government of Nepal.

Ministry of Industry. (2019). *Industrial Statistics, 2018/19*. Government of Nepal.

OECD (2004). *Promoting entrepreneurship & innovative SMEs in a global economy: towards a more responsible & inclusive globalization*. Paper presented at 2nd OECD Conference of Ministers Responsible for Small & Medium-Sized Enterprises (SMEs) Istanbul, Turkey.

Ramanathan, K.; Keith, J., & Bandyopadhyay, M. (ed.) (2011). *Technology transfer & small & medium enterprises in developing countries*. Daya Publishing House 110 035.

Sampath, P. D. & Gunawardana, K. D. (2015). Carbon footprint reduction: a critical study of rubber production in small & medium scale enterprises in Sri Lanka. *Journal of Cleaner Production,* 103 (2015) 87e103.

Vengrauskas, V., Macerinskas, J. & Velickait, R. (2007). The role of small and medium-sized enterprises in the national economy. https://dspace.vutbr.cz/xmlui/bitstream/handle/11012/20032/01_16.pdf?sequence=1&isAllowed=y.

Zaied, A. N. H. (2012). Barriers to e-commerce adoption in Egyptian SMEs. *I. J. information engineering and electronic business.* https// doi.10.5815/ijieeb.2012.03.02.