Business Administration and Business Economics

Does Tacit Knowledge Predict Organizational Performance? A Scrutiny of Firms in the Upstream Sector in Nigeria

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Abstract: This paper examined tacit knowledge so as to see whether tacit knowledge when properly put to use can lead to improved performance by upstream sector firms in Nigeria. Knowledge as we believe, is very vital to both corporate entities and individuals. Knowledge encompasses both explicit and tacit. This paper focused on one aspect of knowledge – 'tacit' which is in the psyche or brain of the individual possessing it. Inspite of the central role it plays, tacit knowledge has been downplayed by most firms. However, we adopted a survey research design via questionnaires administered to 504 employees randomly selected from 3 different oil firms. The data obtained were analyzed using inferential statistics. Also, multi-collinearity diagnoses of tacit knowledge and organizational performance was performed. The result suggests that tacit knowledge is linearly correlated with organizational performance. This implies that tacit knowledge predicts organizational performance. This study is significant in that the findings would be useful to management of firms, as it divulge how tacit knowledge when properly harnessed can lead to increased performance. Most prior studies in this area were conducted in other countries, hence our study is one of the first in Nigeria that examined tacit knowledge and organizational performance.

Keywords: Knowledge Management; Explicit Knowledge; Human Capital; Profitability; Oil Industry

JEL Classification: M1

1. Introduction

Knowledge is the most important factor in economic life" (Stewart, 1997). An organization's competitive advantage depends more than anything on its knowledge, or to be slightly more specific, on what it knows, how it uses what it knows, and how fast it can know something new (Prusack, 1997). Knowledge of varying degrees has obviously always had some part to play in organizational performance from time immemorial; the new claim is that under current conditions, knowledge has come to assume the prime role among the various factors of production (such as Land, Labour, Physical resources and Capital) and that these

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other factors have been eclipsed in their significance by the power of knowledge and its criticality. Knowledge is made up of both explicit and tacit components. This paper focused on one of the components of knowledge – 'Tacit Knowledge'.

In the field of knowledge management, the concept of tacit knowledge refers to a knowledge which is only known by an individual and that is a culture and is difficult to share with people not embedded in that culture. It is that knowledge people carry in their minds and is therefore pretty difficult to access. Often people are not aware or conscious of the knowledge they possess or how it can be valuable to others. Tacit knowledge is not easily shared and it is considered more valuable because it provides context for people, places, ideas and experience. Effective transfer of tacit knowledge generally requires extensive personal contact and trust.

Tacit knowledge consists often of habits and culture that we do not recognize in us. In order for organizations to gain competitive advantage, enhance performance, tacit knowledge is considered imperative in the business milieu (Koontz et al, 1980). A thorough understanding of the environment and its competitive forces is essential if managers must attain their set objectives in an organization. In this context, tacit knowledge is sine qua non for organization that wants to increase performance. This study is significant to the extent that the information gathered during the course of the study would be useful to organizations, as it divulge how tacit knowledge when properly harnessed can enhance the performance of firms. This study is unique in that most prior studies in this area were conducted in other countries[1] while there are no empirical evidence in Nigeria. Hence, our study is one of the first in Nigeria that examined tacit knowledge and organizational performance.

2. Conceptual Framework

The oil industry is one sector where huge sums of money is spent on training and re-training of staff for the purpose of ensuring their relevance in these days of technological changes. The training could be of short duration in the form of seminars or workshops or long term say three to six months or even a year and above but a lot is learnt on the part of such an employee undergoing the programme. The knowledge so acquired is used for the benefit of the organisation before he eventually dies or retires. When the employee retires or leaves, he retires or leaves with this knowledge. His colleagues only have access to that aspect of the employee's knowledge, which he voluntarily offers. He retires with those aspects of his knowledge, which he refused to make known to his colleagues while he was

[1] See (Megan, et.al, 2007; Rohana & Kamaruzaman, 2009; Kiku & Lori, 2009; Orzea, 2009; Hesham & Salah, 2010; Wen-Bing, 2011; Rasula, Vuksic & Stemberger, 2012; Ebrahim, et.al, 2012; Hamidreza & Amirreza, 2012; Nowshade & Elias, 2013)

in active service. The organization is deprived of the use of such knowledge which it helped the employee to acquire through sponsoring him in seminars, workshops and even in acquiring a University education. For the organization, this is somehow a failed investment.

Blake (1998) as cited in Armstrong (2001), articulates that the idea of knowledge management is to encapsulate a firm's shared expertise and distribute it to whenever it can achieve the largest payoff. The above view is in agreement with the resource-based view of the firm which as argued by Grant (1991) propose that the source of competitive advantage lies in its people and the knowledge they carry and not in how it positions itself in the marketplace. Truslller (1998) remarks that the competence to collect, handle and use knowledge in the most successful way turn out to be a foremost source of competitive advantage in most leading firms in the oil industry. A successful company is one that is able to create new knowledge, although, knowledge creation does not lead directly to competitive advantage, it is intervened via novelty. Novelty or innovation means "new". Knowledge creation is, therefore, closely linked to novelty.

Organizational performance is connected to increased profitability, service delivery or getting hold of the most excellent results in essential areas of organizational activities. Little has been done to unchain the "black box' of the processes that connect tacit knowledge with organizational performance. This view is supported by Legge (2001) when she opined that "an issue on which there appears to be a broad measure of harmony is the need to open up the 'black box' of the processes that connect tacit knowledge with organizational performance. As noted by Nonaka and Takeuchi (1995), transferring knowledge from one member of an organization to another begins by the first member converting tacit knowledge (intuitions, silent mental models and personified technical skills) into explicit knowledge (a meaningful set of information expressed in lucid language including numbers or diagrams). This explicit knowledge can then be passed on to another member of the organization – who must convert it into tacit knowledge (internalization) before he or she may use it. As a result of the continually dwindling business environment coupled with the pressure for growth and survival being faced by corporate organizations, there is an urgent need for companies to move towards a knowledge-driven business model. In this context, the contemporary company is organized for constant change. It is the nature of knowledge that changes fast such that today's certainties become tomorrow's absurdities (Yomere, 2003).

3. Methodology

This study examines tacit knowledge and organizational performance in the upstream sector in Nigeria.

3.1 Method of Analysis

This study adopted a survey research design by means of questionnaire. The preference of the design is for the reason that the researcher is concerned in scrutinizing what is happening to sample subjects or variables without any attempt to maneuver or control them. The population is restricted to three out of the "Big Six" in the upstream sector in Nigeria: Shell, Chevron and Texaco. The study draws a sample size of five hundred and four (504) staff only which is from the entire population of two thousand four hundred and seventy four (2474). This is about 20.37% of the population. Also looking at the percentage of total staff, we have Shell 30.40%, Chevron 53.92% and Texaco 15.68%. These figures surpass 10% in each case and by implication, permissible. The above is justified by prior studies conducted by Fisher (1964), Kemp and Reid (1972), Owojori (2002) as cited in Oboreh (2008) which suggested that for a scientific research of this scenery, ten percent (10%) sample size is deemed sufficient.

3.2 Data Definition and Source

The questionnaire was the main instrument of data collection. The questionnaire titled "Tacit Knowledge Management Scale (TKMS) and Organizational Performance Scale (OPS) were constructed by the researcher. This questionnaire measured respondent's knowledge on tacit knowledge and organizational performance. This self-constructed research instrument consists of two main sections: socio demographic information and questions relating to tacit knowledge and organizational performance. Organizational performance and tacit knowledge scale were also included in this section. Organizational performance scales have 17 items and tacit knowledge scale have 11 items. The questionnaire is based on Likert-type scale with five (5) response categorization, namely: Strongly Agree (SA), Agree (A) Disagree (DA), Strongly Disagree (SD) and Undecided (UD). The option of the items are weighed on Likert format with SA= 4, A= 3, DA= 2, SD =1 and UD =0. The reverse however will be the case for negative items on each scale. Items in the questionnaire were tested for their internal consistency. This was done through Cronbach Alpha**.** The computed cronbach alpha obtained is r=0.870, p <0.05. This matrix is an indication that the items in the instrument have good reliability for this study.

The validity of the instrument on tacit knowledge and organizational performance scales were determined by experts in the Department of Business Administration. The items were found to be related to each of the variables of interest in the study. The data so collected were analysed using inferential statistics (correlation and simple regression). Also included in the analysis, is the multi-collinearity diagnoses of tacit knowledge and organizational performance.

4. Results and Discussion

This section presents the results of analysis of data in this study. The data collected from the response of 504 subjects were collated and analyzed on the basis of the independent as well as the dependent variable used in the study. The data obtained were analyzed in order of precedence. First, we presented the correlation results of tacit knowledge and organizational performance, which was closely followed by the simple regression. The multi-collinearity diagnosis test concludes this section. The data obtained were presented in tables 1-3.

Table 1. Correlation Analysis of Tacit Knowledge and Organizational Performance

Model I	Unstandardized Coefficient	Standard Error	Standardized Coefficient Beta	t	Sig.
Constant	15.324	2.160		7.093	.000
Predictor	.715	0.060	.470	11.906	.000

Source: SPSS Output, 2015

From table 1 above, the significant "constant t-value (7.093, $p<0.01$) showed that there are some other potent variables which were not included in the study. The Beta weight for tacit knowledge variable was found significant, Beta = 0.470, $t=11.906$, $p<0.01$.

Table 2. Regression Analysis of Tacit Knowledge and Organizational Performance

Model	R	R^2	R^2 Adjusted	Standard Error of the Estimate
Tacit Knowledge	.470	.221	.220	5.4391

ANOVA

Model I	Sum of Squares	Mean Squares	df	F	Sig.
Regression	4193.688	4193.988	1	141.756	000
Residual	14762.364	29.584	499		
Total	18956.052		500		

Source: SPSS Output, 2015

The result in table 2 showed an R^2 adjusted value of .470 which revealed that there is a positive linear relationship between tacit knowledge and organizational

performance. The computed F (1, 499)= 141.756 p<0.01 is an indication that there is a significant relationship between tacit knowledge and organizational performance. The conclusion drawn is that tacit knowledge is linearly correlated with organizational performance. The R^2 adjusted value of .220 showed that 22% of the variation in organization performance was accounted for by tacit knowledge. This is the effect size of the antecedent variable (tacit knowledge) on the criterion variable (organizational performance). In other words a unit change in the standard deviation of the measure of tacit knowledge will account for about 22% change in organizational performance. The standard error of the estimate having a moderate value of 5.4391 is an indication that the r values are quite appropriate values for the measurement of the relationship between the variables of the study. In order to confirm or certify that no spurious relationship between the variables under investigation, the multi-collinearity diagnosis was carried out and is as presented in table 3.

Table 3. Multi-Collinearity Diagnosis of Tacit Knowledge and Organizational Performance

Model	Zero-order	Partial	Part	Colinearity Statistics	
				Tolerance	VIF
Predictor	**.470**	**.470**	**.470**	**1.000**	**1.000**

Source: SPSS Output, 2015

The zero order co-efficient of .470 is an indication of the correlation between tacit knowledge and organizational performance. The partial correlation co-efficient of .470 indicates the strength of relationship between tacit knowledge and organizational performance. The part correlation was .470. The tolerance co-efficient of 1.000 was high and is an indication that there was no collinearity problem between the independent and dependent variables. In applying tolerance in data interpretation, the rule is if any of the tolerance is small, less than 0.10 multi collinearity may be a problem. But in this case it was not so.

The findings of this study revealed that there is a significant correlation between tacit knowledge and organizational performance. This actually goes to show that tacit knowledge actually predicts organizational performance especially in these organizations being studied. This is in line with the studies of Cooke 2003, Crowley 2001, Gourlay 2002, Mcneiney 2000, when they perceived that tacit knowledge have direct impact on organizational performance and a crucial input to the innovation process in organization. It is that knowledge that is personal, difficult to articulate fully, experienced based, contextualized, job specific, held within, both known and unknown to the holder, transferred through conversation and narrative and capable of becoming explicit knowledge and vice versa. It is the type of knowledge that is used by organizational members in the performance of their work. If this knowledge is properly applied to the performance of individual

work within the organization it will lead to increased organizational performance. Although both the explicit and tacit knowledge are very important, current discussion on knowledge management advances the proposition that a firm's tacit knowledge is more likely to be a source of competitive advantage. The reason for this is that if tacit knowledge becomes explicit, it can readily be read and understood by anyone, and as such can be diffused beyond the organizational boundaries. This means that other organization can easily acquire such knowledge which then makes it not to be a strategic advantage to the owner-organization.

There is inherent difficulty associated with observing and acquiring tacit knowledge and thus limit its extent of diffusion beyond the firms boundaries. This serves to preserve the distinctive nature of the firm's tacit knowledge. That is why tacit knowledge can serve as a basis for distinctive competence and competitive advantage which explicit knowledge cannot serve. For the simple fact that tacit knowledge is embodied in human capital, this has made it valuable as a strategic advantage over competitors. Tacit knowledge is a sustainable competitive advantage to organization (Sanchez, 1998; Tsuokas, 2003).

5. Conclusion & Recommendations

Knowledge as we have rightly known is a widespread currency that commands similar worth anytime and wherever. What you don't know you in reality don't know it. As observed by Frappaolo and Capshaw, (2010), this knowledge is very paramount to both individuals and corporate entities. It is what we use all the time both as an individual, jointly and as corporate entities. This knowledge comprises of both explicit and tacit. Explicit knowledge (ceremonial knowledge) is that kind of knowledge that can be expressed in prescribed language and is without difficulties transmitted among individual. Tacit knowledge on the other hand is most excellently expressed in individual experience and involving such intangible factors ranging from individual faith, perception, instinct and principles. It is that knowledge that is in the psyche or brain of the individual that posses it. The focus of this study is on how tacit knowledge can be appropriately controlled so as to augment organizational performance with emphasis on some oil companies in Nigeria as point of reference.

Tacit knowledge is very crucial to the survival and growth of these organizations. Should the organization continue to train new employees on the same job process because some trained staff has left the service of the organization? One would think that it may be economically wise for the management of these organizations to device ways and means of getting this tacit knowledge from the employees before they finally leave the service of the organization. If this is to be achieved - then how? This is why this study was carried out. From the information gathered and analysis made it was discovered that tacit knowledge actually predicts

organizational performance. This means that tacit knowledge has direct and positive relationship or impact on organizational performance. Since tacit knowledge is seen to actually predict organizational performance, it should be properly managed taking into consideration all the factors in the environment that tend to have any relationship with the management of tacit knowledge and organizational performance.

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The Impact of Consuming Petroleum Products on Economic Growth and Regional Convergence in Iran

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Abstract: One of important subjects considered in models of economic growth is convergence hypothesis. It posits that if different regions have identical levels of log-term equilibrium per capita GDP, the poor regions would have higher rate of per capita GDP growth than rich ones. Therefore the more poor regions would converge towards richer regions in terms of economic conditions. However, since determining factors for long term per capita GDP is not the same in all of regions, the conditional convergence is suggested. This hypothesis states that farer regions from long term per capita GDP would have higher rate of per capita GDP. Since determining factors on economic growth can influence on convergence process, the impact of consuming petroleum products as a determining variable on economic growth has been studied. The model of Barro and Sala-I-Martin was applied in order to examine convergence and the impact of consuming petroleum products on convergence and also reduction of regional inequality among Iran's provinces from 2000 through 2011. Results indicated that there is an unconditional convergence among Iran's provinces and also variables of gasoline, diesel, and Mazut (fuel oil) have significant impact on economic growth and lead to negative convergence among Iran's province. Hence, respecting these results it can be concluded that using energy subsides cannot reduce regional inequality.

Keywords: Economic Growth; Beta convergence; consumption of petroleum products

JEL Classification: E29; O40; R11

1. Introduction

Achieving to economic growth and development has been regarded as one of important economic purposes. According to historical point of view, growth hypotheses was initialized by an article by Ramsay in 1928 and continued by people such as Harrod (1939) and Domar (1946) and then Solow-Swan (1956) completed related issues of neoclassic growth, however growth analyses and implications had not been considered until mid-1980s. By advent of 1970s till

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1980s, most of advanced economics and subsequent developing countries got reduction of economic growth and especially growth of efficiency. This subject led to respecting macroeconomic growth analyses, which at one side caused considering endogenous growth models and on the other hand it led to deliberate exogenous growth models or neoclassic growth models theoretically and empirically. Unlike neoclassic growth models that consider technical progress to be as exogenous, endogenous models posits technical progresses to be as endogenous and seek for some factors for explaining knowledge production.

Besides these analyses, convergence hypothesis has been extracted from neoclassic growth model. This hypothesis states that different regions are getting converged towards a level of stable balance. Whether this stable balance is common or different, then the concepts of absolute and conditional convergence are shaped. Absolute convergence states that if different regions have identical long term equilibrium per capita GDP, then the poorer regions (with lower actual GDP) would have higher rate of per capita income growth than richer regions (with higher actual GDP). Therefore, poorer regions get closer to the richer regions in terms of economic conditions. But since determining factors of long term per capita GDP (parameters of growth model) are not the same in different regions, conditional convergence would be posited. This hypothesis states that farer regions from long term per capita GDP would have higher rate of per capita GDP growth.

One of important features of developing countries is the presence of dichotomy among different regions. Some of them, which are big cities, are higher level of development and per capita income would be more. Researchers done in Iran indicate difference among different province in terms of economic development and removal of dichotomy among different provinces and balanced development is among objectives of country's developmental plans. The requisite for achieving to this purpose is higher speed of growth in undeveloped and poor regions towards developed and rich ones, which has been regarded as convergence hypothesis in growth models.

According to various economic schools, work force and capital (including professional and non-professional) are considered as most important factors for economic growth at growth functions. In new growth theories, the factor of energy is also introduced, which is recognized under title of energy carrier including petroleum products, electricity, gas, etc. this hypothesis states that consuming energy carriers are effective on economic growth and subsequently on convergence speed. Therefore, in the case of proving this hypothesis, it can be concluded that injecting indirect subsidies of energy by government into poor regions through keeping prices level low and increasing incentive of consumption can influence upon regional economic growth and speed of regional convergence.

Respecting mentioned issues, the main question of present is raised: is there any convergence among provinces of Iran? And what kind of effect do consuming petroleum products have on convergence among Iran's provinces?

This research examines the hypothesis for Iran's provinces from 2000 through 2011 using the model of Barro and Sala-i-Martin. Remaining parts of study are presented as; first a brief review of growth and convergence would be presented, then a review on previous studies would be provided and finally an introduction of data and hypothesis testing and conclusion would be brought.

2. A Review of Growth and Convergence Theories

One of obtained results from economic growth models id economic convergence hypothesis. It states that economics with lower income towards economics with higher income would tend to faster rates of growth.

Convergence hypothesis is the natural result of neoclassic homogeneous of production function degree 1 towards two inputs of work force and capital. Also, after stating convergence hypothesis of Solo neoclassic growth model, this hypothesis is generated into endogenous growth models. Based on convergence literature, if economics get closer to a stable balance level from per capita income, absolute convergence would be appeared. If they get converged to their stable levels, conditional convergence would be established. According theory of neoclassic models, convergence is examined through income level and growth rate.

Here, convergence hypothesis is examined within theoretical frame of Ramsay model. In this model, it is assumed that households have infinite age; hence those levels of consumption and savings rate would be chosen that would maximize their utility. Therefore, rate of saver is no longer stable and it is a function of per capita capital of k. also, it is assumed that households are the same and grow along with constant rate of n growth, $L(t) = L(0)e^{nt}$. In order to obtain convergence equations in this model, first it is assumed that production function of Cobb-Douglas is presented as follows;

$$\hat{y} = f(\hat{k}) = A\hat{k}^{\alpha} \quad \textbf{(1)}$$

In this relation, y is effective per capita GDP, and k is effective per capita capital. According to this model, household utility function is as follows;

$$U = \int_0^{\infty} u[c(t)].\, e^{nt} e^{-\rho t} dt \quad \textbf{(2)}$$

In which ρ is time priority and ρ>0. It is assumed that $u'(c) > 0$ and$u''(c) < 0$.

In close economics, savings are equivalent to investment and since saving is no longer a constant value, hence the equation of effective per capita capital growth can be written as:

$$\dot{\hat{k}} = f(k) - \hat{c} - (\delta + g + n)\hat{k} \quad \textbf{(3)}$$

In which $\hat{\boldsymbol{c}} = C/LA$, δ is depreciation rate, g is technology growth rate, n is population growth rate; f (k) is the production function.

Considering instantaneous utility function as ($u(C) = \frac{C^{1-\theta}}{1-\theta}$, $(\theta > 0$), it is called utility function with constant relative risk aversion or a function with constant elasticity of substitution between periods. By applying first order condition of maximizing utility function of per capita consumption growth rate can be calculated with Euler equation;

$$\frac{\dot{\mathrm{C}}}{\mathrm{C}} = \left({}^{1}/_{\theta}\right)[f'(k) - \delta - \rho] \quad \textbf{(4)}$$

In this equation, the relation between $f'(k)$ and $(\delta + \rho)$ indicates that pattern of household consumption is increasing, decreasing, or fixed. At the state of stable balance, variables of efficient per capita $(\hat{k}, \hat{y}, \hat{c})$have growth rate of zero. Per capita variables of (k, y, c) would grow along with g and level of $\hat{k}$ at the state of stable balance can be obtained through the following relation;

$$f'(\hat{k}^*) = \delta + \rho + \theta g \quad \textbf{(5)}$$

Using log linearization of Eqs:3 and 4, transitional dynamics can be explained near stable balance. In order to determine mean growth rate of y between zero and T, the following relation is applied:

$$\frac{1}{\mathrm{T}}\log\left(\frac{y_T}{y_0}\right) = g + \frac{(1-e^{-\beta T})}{T}.\log(\frac{\hat{y}^*}{\hat{y}_0}) \quad \textbf{(6)}$$

In their researches from 1990 through 1995, Barro- I- Sala applied the following equation for determining β on convergence in European and American states:

$$\frac{1}{\mathrm{T}}\log\left(\frac{y_T}{y_0}\right) = C - \frac{(1-e^{-\beta T})}{T}.\log(y_0) + u_t \quad , u_t = (0, \sigma^2) \quad \textbf{(7)}$$

$$C = g + \frac{\left(1 - e^{-\beta T}\right)}{T}.\log(y^*)$$

In this relation, $\boldsymbol{y_0}$ refers to per capita income in 1st year, T is the number of years during entire period, y^* refers to equilibrium per capita income. In Eq.7, intercept of c indicates economy's long term growth rate. In the equation above, positive parameter β indicates balance speed towards stable balance, which is obtained from the following relation:

$$2\beta = \{\psi^2 + 4(1 - \frac{1-\alpha}{\theta})(\rho + \delta + \theta g)[\frac{\rho+\delta+\theta g}{\alpha} - (n + \delta + g]\}^{\frac{1}{2}} - \psi \quad \textbf{(8)}$$

In which; $\psi = \rho - n - (1 - \theta)g > 0$

The higher value of β means more interaction between mean growth rate and difference between $\log(\hat{y}^*)$ and $\log(\hat{y}_0)$. This convergence is running with more speed towards stable balance. In order to make convergence, β should have positive sign in the Eq.7. it means that reverse relation between initial state and mean growth rate is present during the period. In other words, those regions with lower initial income would have higher growth rate towards regions with higher rate of initial income. However, negative β means divergence of per capita income, hence the gap between poor and rich regions would be higher along with time.

It should be noted that other regional differences are not considered in the mentioned equation. This equation is known as absolute convergence equation, in which coefficient refers to absolute convergence speed among regions. But respecting this point that different region based on many social, economic, political parameters, hence factor c would be different among different regions. Considering other parameters measurable in regression, the equation absolute convergence is converted into conditional convergence as follows:

$$\frac{1}{\mathrm{T}}\log\left(\frac{y_T}{y_0}\right) = C - \frac{(1-e^{-\beta T})}{T}.\log(y_0) + \emptyset V + u_t \quad \textbf{(9)}$$

In which V represents vector of other regional variables such as policy (the way of economic management), cultural and social (difference in language, population distribution, et c), regional (geographical situation), economic (income and savings level), and political (degree of political stability and the way of governance) variables. In this equation, conditional convergence and its factor **β** represent speed of conditional convergence among regions.

In order to examine the impact of petroleum products consumption on regional convergence, conditional convergence would be applied, in which consumption of petroleum products are considered as variables at right side of regression.

3. A Review on Experimental Studies

Convergence hypothesis is considered as the most important obtained results from neoclassic growth pattern, introduced in to experimental studies by works of Barro-I-Sala during 1990s. forst studies upon convergence were done for income rates, which examined the relation between per capita growth rate among regions and their per capita initial income. But by appearing some problems on explaining the reasons behind observing different income rates among different regions and countries, some issues related to effective factors on growth were examined.

Bergstrom (1998) examined the process of regional convergence upon 24 regions in Sweden from 1945 through 1990 and confirmed convergence hypothesis of per capita income in these regions. Convergence speed (conditional) was 0.055 indicating removal of 5.5% of gap in per capita income each year.

Zhsng, Litu, and Yao (2001) studied convergence of regional per capita income among China regions applying time series method (considering structural failure or not considering structural failure) for duration 1952-1997. Results showed that each region is converging towards its balance point. In this state, Gini factor was decreasing for each region and Gini factor was increasing among regions. Moreover, by inserting structural failure, they found out a shock in regions' per capita income.

Dunaway, Kaufman, and Steven (2003) studied convergence and the role of government policies. This research was done upon provinces in Canada from 1961 through 2000. Results indicated that convergence hypothesis is confirmed for these provinces. In order to show conditional convergence and the role of government policies, the system of instantaneous equations were applied,

Pedroni &Yao (2006) examined regional inequality among China provinces applying panel data model. Evidences showed that since economic reforms of free trade from 1978, China provinces have had economic growth and divergence has been increasing among these provinces.

Fleisher and Zhao (2010) have studied the impact of human capital, infrastructure capital, foreign direct investment (FDI) on regional inequality and economic growth in China. Results indicated that investment on infrastructures had higher outputs in eastern regions of China and human capital has had a positive effect on production and efficiency growth of production factors among provinces. In whole, investment on human capital would reduce regional inequality in less developed regions and foreign direct investment would have more impact on production prior to 1994 than after that, due to increasing support and accomplishments of private and semi-private business units.

4. Model Estimation

In this part, required data for estimating model would be explained based on experimental models and a brief description upon the way of collecting them would be presented. Next, based on experimental model and present data, the model would be estimated and obtained results would be explained.

4.1. Data Explanation

During present study, sectional data for 28 provinces in Iran would be applied. Data used in this study consists from actual GDP for Iran's provinces and consumption petroleum products. Data on GDP in these provinces was obtained from provincial data for Iran statistical center. Since figures are nominal and in spite of inflation, it is possible to observe misleading data, hence a price index is needed for deflating in each province, for which consumption price index (CPI) was obtained from annual statistics of central bank. On the other hand, since convergence test is conducted using per capita data, related data for provinces' population was collected for statistics center. Then, by dividing actual income in estimated population for each province, the value of actual per capita income is obtained, in Iran; data from GDP from 2000 through 2011 are available. Therefore, convergence is calculated during this period. Since in some models of economic growth consumption of energy carriers are known as one of important growth factors, the variable of consuming energy carriers has been considered in this model, whose data was obtained from international energy study institutions. Respecting data as sectional data, the method NLS is used for estimating model. Some provinces have major petroleum resources. In this regard, a dummy variable is considered in the equation. The figure1 is regarded for these provinces and zero is considered for other provinces. Oil-rich provinces were Ilam, Bushehr, Khuzestan, and Kohkiluyeh and Bouyer Ahmad.

4.2. Experimental Estimation

Since, households and factories of regions in a country incline towards a similar culture and technology and all of regions have a common central government, hence they would have shared institutions and legal system. Therefore, non-conditional convergence or absolute convergence among different regions of a country towards other countries is more likely. First, regardless regional differences, absolute convergence can be estimated among Iran's provinces using Barro and Sala -I-Martin method as follows;

$$\left(\frac{1}{11}\right)\log\left[\frac{rpogdp90}{rpogdp79}\right] = \alpha_0 - \left[\frac{1-\exp(-11*\alpha_1)}{11}\right] * \log(rpogdp79) + \alpha_2 DUM + v_t\,, v(0,\sigma^2) \qquad \textbf{(10)}$$

In this relation, $\log\left[\frac{rpogdp90}{rpogdp79}\right]$ represents actual rate of per capita income growth at the end of period towards actual per capita income from the beginning of period and $\log(rpogdp79)$ refers to actual per capita income log form the beginning of period and DUM is a dummy variable for oil-rich provinces and $\boldsymbol{\alpha_1}$ is speed of absolute convergence. Obtained results from estimation are presented in the following table.

Table 1. Results of non-conditional convergence with Barro and Sala -I-Martin method

equation	α_0	α_1	α_2	R^2
Equation.10	0/203 (10/87)	0/052 (2/38)	0/057 (3/09)	0/33

Source: Research finding

Figure in the parentheses represent t value for coefficients that by comparing them with present values in the table t, it can be claimed that coefficient rpogdp79 has required significance level. Therefore, first there are some evidences implying absolute convergence among Iran's regions. Factor of convergence speed $\boldsymbol{\alpha_1}$ is positive with value of 0.052. Hence, the relation between initial state of provinces and their growth has been negative; hence poorer provinces have more growth than richer provinces. Therefore, according to definition of absolute convergence, these provinces are converging towards a common level of stable balance. Second, convergence speed among provinces equals 0.052. It means that 5.2% from gap between regions is reduced to the balance point. Petroleum dummy variable is positive and significant; indicating that availability of oil in some provinces has a positive effect on growth in these provinces. Obtained R^2 indicates that only 33% of changes in actual per capita growth rate are justified by initial actual income rate. Therefore, other factors are effective in explaining growth, which have not been elaborated here. One of them is energy consumption. In order to answer whether variables of consuming petroleum products (gasoline, diesel, Mazut (fuel oil)) are effective on process of convergence, it is needed to examine individual effect of each on economic growth and speed of convergence. As explained before, economies don't have equal parameters and it may be different rates of savings or other various parameters. Hence, appeared convergence is called conditional convergence. In order to estimate this kind of convergence, different variables can be inserted at the right side of equation. These represent other factors effective on per capita production growth rate. In this regard, the variable of per capita consumption of petroleum products would be considered individually for examining the impact of each variable on actual per capita convergence and growth. Final equations are as follows and respecting results for each are provided in table.2.

(11) $$\left(\frac{1}{11}\right)\log\left[\frac{rpogdp90}{rpogdp79}\right] = \alpha_0 - \left[\frac{1-\exp(-11*\alpha_1)}{11}\right] * \log(rpogdp79) + \alpha_2 DUM + \alpha_3 cpet + v_t$$

(12) $$\left(\frac{1}{11}\right)\log\left[\frac{rpogdp90}{rpogdp79}\right] = \alpha_0 - \left[\frac{1-\exp(-11*\alpha_1)}{11}\right] * \log(rpogdp79) + \alpha_2 DUM + \alpha_3 ckero + v_t$$

(13) $\left(\frac{1}{11}\right)\log\left[\frac{rpogdp90}{rpogdp79}\right] = \alpha_0 - \left[\frac{1-\exp(-11*\alpha_1)}{11}\right] * \log(rpogdp79) + \alpha_2 DUM + \alpha_3 cgaso + v_t$

(14) $\left(\frac{1}{11}\right)\log\left[\frac{rpogdp90}{rpogdp79}\right] = \alpha_0 - \left[\frac{1-\exp(-11*\alpha_1)}{11}\right] * \log(rpogdp79) + \alpha_2 DUM + \alpha_3 cfuo + v_t$

In these relations, Cpet refers to mean of per capita gasoline consumption, ckero is mean of per capita consumption for Kerosene, and cgaso is mean of per capita consumption for gasoil, and cfuo implies mean of per capita consumption for fuel oil. Estimation results of coefficients are presented in the following table.

Table 2. Results of the effect of petroleum products consumption on convergence

Equation	Intercept α_0	α_1	α_2	α_3	R^2
Equation11	0/16 (6/68)	0/097 (2/31)	0/073 (3/94)	0/22 (2/27)	0/45
Equation12	0/22 (8/30)	0/065 (2/36)	0/059 (3/2)	-0/11 (-1/21)	0/37
Equation13	0/18 (9/34)	0/055 (2/67)	0/06 (3/56)	0/05 (2/45)	0/46
Equation14	0/2 (11/022)	0/061 (2/52)	0/065 (3/48)	0/034 (1/56)	0/39

Source: Research Finding

Figures in the parentheses imply t value for coefficients that by comparing them with present values in the table t it can be claimed that at error level of 5%, $\boldsymbol{\alpha_3}$ in Eqs.11 and 13 is significant showing effect of consumption variables of gasoline and diesel and at error level of 10%, $\boldsymbol{\alpha_3}$in Eq.14 implying effect of fuel oil consumption on growth is significant and positive sign indicates a direct relation of these variables with provinces' income growth. However, the effect of consuming kerosene on convergence (factor $\boldsymbol{\alpha_3}$in Eq.12) is insignificant. By considering consumption of kerosene in Iran it cab ne observed that domestic and industrial sectors have the lowest and the highest level of final consumption of kerosene, 90.3, 0.5 respectively and since the effect of domestic sector is very trivial in GDP, hence increase of consuming petroleum products has not significant effect on economic growth. Consuming gasoline, diesel, and Mazut (fuel oil) in transportation and industrial sectors is significant, which can lead to increase provinces' income. Since per capita consumption in rich provinces is usually higher than poorer ones, hence it mean that divergence and more gaps can be appeared among provinces and as observed by considering these variables, speed of convergence increases from 0.053 to a higher value. Increase of $\boldsymbol{\alpha_1}$in Eqs.11, 13, 14 imply negative effect on convergence between provinces.

Now by analyzing obtained results, in can be concluded that in spite of absolute convergence between regions, variables of consuming petroleum products as one of effective factors on economic growth not only has not reduced income gap, but also it has increased divergence. Hence, it can be claimed that subsides in the energy sector applied by government through reducing regional inequality have cause reduction of convergence with the aim of reducing prices for increasing energy consumption. It is obvious that by paying energy subsides by government; acceleration of convergence would not be effective because richer regions have higher rate of consumption and achieve higher rate of economic growth.

5. Conclusion and Suggestions

In examining the process of convergence between Iran's provinces and by respecting obtained results from estimated model, presence of non-conditional convergence between provinces was confirmed. Also, it was observed that provinces with speed of 0.052 per year are converging towards an equal level of stable balance, by which it would take 13 year to remove half of gap between current level of actual per capita income and stable balance level.

In examining the impact of energy carriers on convergence, variables of consuming different kinds of energy carriers were added to the model. In the case of positive impact of consuming energy on convergence, it can be concluded that energy carriers result in reducing prices, through which increase of energy consumption would be observed that can have a positive significant impact on convergence. Finally, results showed that variables of consuming gasoline, diesel, and fuel oil have a positive significant impact on economic growth and convergence coefficient would be increased. However, since consuming these products in richer regions is higher than poor ones, hence it has a negative effect on convergence and reduces convergence. Therefore, it is obvious paying subsides by government cannot be effective on acceleration of convergence. It is suggested that since consuming petroleum products cause reducing convergence, hence reducing energy subsides may prevent wasting resources and also by substituting energy subsides for required construction costs for each province with the aim of using untouched capacities in the region economic growth and convergence acceleration would be possible.

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Firm Traits and Web Based Disclosures in Top Nigerian Firms

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Abstract: The use of the internet as a medium of dissemination of information to stakeholders is increasingly gaining grounds. This study extends existing literature on web disclosures by investigating the characteristics that predict the extent of web-based disclosures. In this study, corporate websites of top Nigerian firms are used as sources of data, while a regression analysis is employed to examine the extent of prediction. Results indicate that the firm size and industry type are significant determinants of web disclosures. However, other firm traits such as ownership dispersion and financial performance do not significantly explain the extent of internet disclosures. The study recommends that a regulatory template for corporate web disclosures be put in place by government regardless of the size or industry classification of the firm. This is with a view to considerably reduce agency conflicts arising from information asymmetry in publicly listed firms in Nigeria.

Keywords: Financial Reporting; IT management; Statistical methods

JEL Classification: M40; M15; C1

1. Introduction

Companies listed on the stock exchange are required to make more corporate information disclosure for the benefit of both potential and existing investors. The use of annual reporting is an indispensable means of disseminating financial and non-financial information with an objective of furnishing stakeholders with basic and useful information.

As required by the Companies and Allied Matters Act (1990), the board of directors of publicly traded companies must present statements of the company in general meetings at least once in a year. The essence is to show the extent to which shareholders' wealth has been maximized and basically the prowess of management in efficiently managing the resources of the firm. Firms have always presented their corporate reports through traditional methods in form of printed reports but of recent have adopted the use of websites in disclosing such information. According to Willis et al., (2003), the potential role of the internet as a

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means of communicating information has been identified to meet shareholders' demands for volume of information and greater speed most especially at a time when businesses have sought better ways of communicating. Internet reporting has become the norm, rather than the exception in most developed countries (Gowthorpe, 2004). Ettredge et al., (2001) document that most of the largest corporations in developed countries now have an internet website for financial reporting. Web based disclosure is the dissemination of corporate financial and non-financial information via the internet facility. It is quite obvious that not all information disclosed in annual reports is financial. There is certain important non-financial information which is usually strategic for investors in decision making. Web based disclosure is an umbrella term that encompasses both financial reports and non-financial reports such as social responsibility, corporate governance, environmental reports, etc. In other words, web-based disclosures envelope both internet financial reports and internet non-financial reports. Lymer (1999) argues that the web is an invaluable medium of disclosing both financial and non-financial information due to its ability to offer an interface between management and stakeholders without the dependence on press or analysts. Debreceny et al., (2002) demonstrate that web-based disclosures are cost effective, provide information in a timely manner, and cover a wide audience. The concept of web based disclosures became popular with the development of the world-wide-web (www) since 1994 (Allam & Lymer, 2003); and ever since, the internet has been progressively employed for corporate reporting (Lymer& Tallberg, 1997). Notwithstanding the growing use and acceptability of the internet as an unequalled medium for disseminating information, some firms in Nigeria still do not operate a corporate website or are not optimally utilizing existing websites. The disclosure of corporate information via the web is yet to be mandated by regulatory authorities; hence such disclosures are done voluntarily. This study is thus poised at examining certain firm characteristics that could potentially determine the extent to which firms disclose information on the web. The paper would provide interesting contributions to literature by filling existing gap in the knowledge of the subject particularly now that there are so many clamours for the digitalization of monetary and non-monetary transactions in the Nigerian corporate climate. In a study conducted by Salawu (2009) it was documented that of the 220 firms quoted on the Nigerian Stock Exchange, 54% (119) have official websites while 46% (101) do not have an official website at all. However only 14.1% (31) of these companies publish their annual reports online while 86% (189) do not publish their reports online. This is an appalling statistic despite the information technology era we find ourselves in.

2. Prior Literature

The corporate reporting to stakeholders will transport almost entirely from the current primarily print-based mode to using the web as the primary information dissemination channel, with the print-based mode to using the web as secondary channel (Lymer, 1999). Regardless of this envisaged position, the academic research into the use of the internet in financial disclosure is still in its infancy in developing countries. Most studies have concentrated on the extent of reporting and have not conducted research on the possible determinants. However, some studies in developed emerging economies exist. Debreceny et al., (2002) studied the information presentation of 660 large companies in 22 countries to ascertain firm and environmental determinants of web reporting. Firm characteristics of listing status, size, technological environment, leverage, growth prospects and systematic risk were used as independent variables of which firm specific traits of size, U.S listing, and technology environment were ascertained as significant determinants of varying levels of disclosures. Oyelere et al., (2003) concluded in their study that larger companies, internationalized, liquid and more profitable companies were found to engage in internet financial reporting. They identified size, liquidity, internationalization, share spread and industry as statistically significant predictors of corporate web disclosures while profitability and leverage were not significant determinants. Asbaugh et al., (1999) investigate the internet financial reporting (IFR) practices of U.S companies and find that firms operating websites are larger than firms without websites.

They employed a univariate analysis in their investigation and found profitability and percentage of equity shares held by individual investors as associated with IFR. However, when a multivariate logit regression was applied, only firm size was found to associate with IFR. Pirchegger & Wagenhofer (1999) examine internet disclosure practices by German and Austrian companies, and find that for Austrian companies, internet financial reporting is associated with firm size, measured by sales and dispersion of its equity ownership. However these findings did not extend to German companies. The study conducted by Xiao et al., (2004) investigates the determinants of 300 listed Chinese companies' web-disclosure practices.

They find that such internet disclosures are responsive to specific attributes of their environment. Size, auditor and industry type were ascertained to be significant predictors while profitability was negatively associated with IFR. It is strongly recommended that the paper should have an even number of pages, but no longer than 4 to 14 pages. In some cases papers with more than 14 pages will be accepted by the editorial board if they contain the report of a wider research activity which can not appear separated in two papers.

2.1. Underlying Theory

The signals theory offers an underpinning for this study. The theory registers that voluntary disclosure behaviors are a control mechanism from ownership. The theory demonstrates that voluntary information is signal aimed at reducing then information gap between insiders and outsiders. It also suggests that large and profitable firms will disclose more information to stakeholders with the aim of informing stakeholders about their performance and also to engender legitimacy and acceptability as public expectation demands. (Neysi et al., 2012)

2.2. Hypotheses Development

Previous studies document that the size of the company has a positive relationship with corporate web disclosures (Chow & Wong-Boren, 1987; Botosan, 1997; Frankel et al., 1999). According to Hossain et al., (1995), agency costs tend to increase with firm size. Larger firms are more visible and therefore may be more likely to disclose detailed information. Oyelere et al., (2003) argue that larger firms have a diverse product range and complex distribution network than smaller firms. This could trigger the demand for more complex management information systems and databases need for management control purposes. This position has been corroborated by a number of empirical studies (Bonson & Escobar, 2002; Ettredge et al., 2002; Xiao et al., 2004 and Al-Shammari, 2007). Nevertheless, some other studies have contravened this finding. These include Ahmed & Nicholls (1994) and Ahmed (1996). From the above literature, the following hypothesis is developed:

H_1 - There is a positive and significant relationship between the size of a firm and extent of corporate web-disclosures.

According to the tenets of the Agency theory, profitable firms have the likelihood to disseminate more corporate information on the web. Managers of such firms do this in order to obtain compensation justification (Haniffa & Cooke, 2002). Moreover, companies with better financial performance may disclose more information to signal their strength and opportunities. Alsaeed (2006) argues that promoting a positive sense of performance can be done through releasing more information to the public. Studies in this line have been conflicting with some reflecting a positive relationship (Owusu-Ansah, 1998; Pirchegger & Wagenhofer, 1999) while others such as Wallace and Naser (1995) document a negative relationship. Oyelere et al., (2003), Xiao et al., (2004) and Aljifri (2008) find no significant impact of profitability on disclosure levels. Based on the foregoing, we hypothesize that:

H_2 – There is a significant relationship between financial performance and extent of corporate web disclosures.

According to Raffournier (1995), the agency theory predicts that firms whose ownership is diffused tend to disclose more information to assist shareholders in monitoring their behavior. As such firms with widely held ownership have a greater likelihood to adopt web-based disclosures than firms with closely held ownership. Oyelere et al., (2003) document that the degree of financial reporting on internet increases with ownership dispersion thus supporting the agency theory. This explains that the more dispersed the shareholders, the higher the pressure for more disclosures. Agboola & Salawu (2012) argue that ownership diffusion is a signal of a good corporate governance mechanism. Akhtaruddin et al., (2009) examined the relationship between ownership concentration and disclosures and found a positive relationship between the level of disclosures and percentage of outside ownership. We hypothesize that:

H_3 - Ownership dispersion has a positive association with the extent of corporate web disclosures.

The signaling theory suggests that variation in the extent of disclosure could result from industrial classification. According to Cooke (1989), differences in disclosure levels between industries could be attributed to the high level of voluntary disclosure by a dominant firm within an industry which could trigger a bandwagon effect. When a firm within a particular industry does not conform to the disclosure practices within that industry (including web disclosures) then it may be interpreted that the firm is concealing unpalatable news (Craven & Marston, 1999). Empirical findings along this concern have been conflicting. Industry type has been identified as a significant determinant of disclosure levels (Xiao et al., 2004) while Wallace et al., (1994) provide evidence of no association between the two variables. We thus hypothesize that:

H_4 – Industry type has no significant association with the extent of corporate web disclosures.

3. Methodology

3.1 Sample

The sample used in this study is drawn from the Forbes Africa Top 25 companies (2012) in West Africa. Forbes Africa assessed these firms to have sustained excellence. They were ranked in terms of profit, revenue and market capitalization. The sample of this study consists of the twenty (20) Nigerian firms that made this list. These firms have as expected maintained robust and functional corporate websites and have disseminated corporate financial and non-financial information via the internet. The list is found in Appendix 1.

3.2. Variables

Dependent variable – We develop a disclosure index to represent the extent of web-based disclosures. The index covers financial and non-financial information expected to be disclosed on corporate websites by sample firms. The web based disclosure index (WBDI) is based on the information firms provide in their annual reports to shareholders which focuses on stakeholders' needs. An adapted Sharma (2013) disclosure index is employed. The disclosure index is anchored on five categories: financial items, strategy, production management, market and human capital. A total of 30 indicators have been identified within the five categories, the list is found in appendix 2. We employ an unweighted dichotomous rating system assigning a firm that discloses an item a score of '1' and where a disclosure of such item is absent on the website; a score of zero is assigned. The web based disclosure index is the ratio of the actual score attained by the firm divided by the maximum score.

Independent Variables

Size- Size is measured as the natural logarithm of total assets

Financial Performance- is captured as the return on capital employed (ROCE). This is measured as the profit before interests and tax to net capital employed. The choice of this performance measure is more preferred because it has evolved considerably over the past decade and has enjoyed periods of popularity (Oba & Fodio, 2013).

Ownership dispersion – Measured as proportion of shares held by the general public to total number of shares

Industry Type – This variable is also captured as a dummy. The industry grouping of the sample firms based on the Nigerian Stock Exchange classification is followed. An industry being examined is assigned '1' while other industries are assigned '0'.

3.3 Data Collection

Data was extracted from annual reports of sample firms posted on their corporate websites.

3.4 Model Specification

We address the hypotheses of this study using a multiple regression technique to assess the statistical impact of the various hypothesized determinants of web based disclosures in the sample firms. The model is specified as:

$$WBDI = \alpha_0 + \alpha_1 SIZ + \alpha_2 PERF + \alpha_3 OWND + \alpha_4 CG + \alpha_5 FIN + \alpha_6 IND + \alpha_7 OG + e \quad (1)$$

Where WBDI = web-based disclosure index

SIZ = Firm Size

PERF = Financial Performance

OWND = Ownership Dispersion

CG = Consumer Goods

FIN = Financial Services

IND = Industrial Goods

OG = Oil and Gas

4. Results and Discussion

We perform a normality test to determine that the dependent variable was normally distributed. The Kolmogorov-Smirnov and Shapiro-Wilk test of normality was conducted with emphasis on the results of the Shapiro-Wilk test since the sample of this study is not asymptotic.

Table 1. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
WBDI	.0450	80	.000	.734	80	.001

a. Lilliefors Significance Correction

The conducted tests of normality show that the web-based disclosure index is not normally distributed with significant values appearing less than 0.05.

Basically, significant values above 0.05 are considered as reliable evidence that the data set is normally distributed. According to Brown (1997), a violation of the normality assumption invalidates other statistics such as t-test and related statistics. To address non-normality, a common treatment is to perform a logarithmic transformation (base 10).

$WBDI = Log_{10}WBDI$

Table 2. Tests of Normality after logarithmic transformation

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
WBDI	.112	74	.048	.325	74	.079

a. Lilliefors Significance Correction

The normality test above shows that the transformed values produce normal distribution. Significance values are reliably above 0.05.

Table 3. Results of the Ordinary Least Square Regression Model

Variables	Estimated coefficient	Standard Error	P-Value
Intercept	0.211	0.137	0.435
SIZ	0.095	0.041	0.024
PERF	0.014	0.016	0.372
OWND	0.087	0.162	0.590
CG	0.349	0.106	0.001
FIN	0.169	0.208	0.040
IND	0.107	0.105	0.010
OG	0.328	0.116	0.006
R^2 0.560	**Fstat(prob) 0.003**		

Source: Regression results using SPSS (Version 17)

The coefficient of determination R^2 (0.560) shows that over half the variation that exists in web-based disclosures is explained by the model. The F statistic goes to confirm the statistical significance of the model. This lends itself to the argument that the variables of the study have an aggregate significant impact on the extent of web-based disclosures. However, there is need to disaggregate the impact and examine the extent to which each of the regressors impact on the dependent. Firm size from the results of the regression has been clearly identified as a significant predictor of web-based disclosures. Results reveal that it has a positive significant impact on web-based disclosures. This goes to confirm our maintained hypothesis that there is a significant relationship between the size of a firm and extent of corporate web disclosures. Our findings corroborate the works of Ettredge et al., (2002) and Agboola and Salawu (2012) who document that larger firms were more probable to prepare financial information on the internet and utilize web disclosures more than their counterparts. Our findings however contravene the results of the study conducted by Agyei-Mensah (2012) who registers that firm size is not a significant explanatory variable for the internet reporting index.

This study finds financial performance (measured by return on capital employed) an insignificant predictor of web-based disclosures. Findings are consistent with Oyelere et al., (2003), who demonstrate in their study of 132 companies listed on the Abu Dhabi Securities Exchange and Dubai Financial Market that profitability has an insignificant impact on the levels of internet financial disclosure. Our results are similar. However this finding is not in line with the results of the research by Homayoun and Rahman (2010) who register that profitable companies have strong incentives to disclose information in order to stand out from their competitors.

Our results in this study also demonstrate that ownership dispersion has no link with web-based corporate reporting. This permits an empirical ground to reject hypothesis 3 which states that ownership dispersion has a positive association with the extent of corporate web disclosures. This finding is quite a contrast to the hypothesis of the

agency theory that explains that managers of companies whose ownership is diffused usually have an incentive to disclose more information with a view to helping shareholders monitor their behavior. Our findings nevertheless are consistent with the results of Oyelere et al., (2003) who document no significant impact of ownership diffusion on internet financial reporting.

Finally, the findings of this study show that the industry type goes a long way to explain the extent of web disclosure. As such the kind of industry a firm operates in impacts on its action to disclose more information via the internet. This is in harmony with the results of the study conducted by Xiao et al., (2004) who empirically register that industry type is a significant determinant of the level of disclosure.

5. Conclusion

Web-based disclosures are yet to be mandated by regulatory authorities in Corporate Nigeria. Internet financial reporting has ipso facto been on voluntary basis. However, its potency in recent times as a tool of communication and information asymmetry reduction has been unparalleled; thus encouraging 'information responsible' firms to adopt this broad coverage of information reporting.

This study was undertaken to investigate firm traits that possibly predict the extent of web disclosures in quoted Nigerian firms. Our results show that firm size and industry type are the significant determinants of web-based disclosures in study firms. As such, the larger a firm is the more it disseminates corporate information via the web. A possible explanation for this is that since such large firms receive more focus from various stakeholders; they would inevitably be under much pressure to meet with global best practices and by so doing disclose their results via the internet so as to permit accessibility. We also document that the industry type is a key predictor of internet reporting by quoted Nigerian firms. High-tech industries such as the consumer goods, Industrial goods, oil and gas and financial services were found to aggressively impact the extent of web-based reporting. It is evidently clear that the industry exposure to which a firm operates in eventually affects its voluntary financial disclosure level. This goes to corroborate the signals theory that certain firms in order to sustain reputation and acceptability and in a bid to reduce information asymmetry will disclose more information so as to send signals to stakeholders regarding the firm's position and visibility. The target is to meet with public expectation and usually when this begins with a dominant firm in an industry; it has a ripple effect on the industry. This study registers that financial performance and ownership dispersion have no statistically significant impact on web-based disclosures. We demonstrate that these variables do not trigger an increased disclosure of corporate information on the website.

The study recommends that the government puts in place a regulatory template for internet reporting regardless of the size or industry classification of a firm with a view to reducing agency conflicts arising from information asymmetry. This is most emphasized now that the world is in an information communications technology (ICT) age.

Future research in this direction is encouraged. Future studies could possibly examine the extent to which these firm determinants predict the web disclosure of voluntary and mandatory information items and if there is any significant difference in the web disclosure of these items across industries. The extent to which stakeholders access or prefer corporate information on the web as against published hard reports is also an interesting point of study and would add valuable contribution to existing literature.

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Appendix 1

List of twenty Nigerian firms that made the Forbes Africa top 25 companies (2012) in West Africa

1. Dangote Cement
2. Zenith Bank Plc
3. Ecobank Transnational Incorporated
4. Nigeria Breweries Plc
5. First Bank Plc
6. Guaranty Trust Bank Plc
7. United Bank for Africa
8. Guiness Nigeria
9. Nestle Nigeria
10. Access Bank

11. Flour Mills Nigeria
12. Union Bank of Nigeria
13. Stanbic IBTC
14. First City Monument Bank
15. Lafarge Cement WAPCO
16. Total Nigeria
17. Unilever Nigeria
18. PZ Cussons
19. UACN
20. Cadbury Nigeria Plc

Appendix 2

Web-Based Disclosure Index Items

Financial- Income statement of the year

- Balance sheet of the year
- Cash flow Statement
- Notes to Financial Statements
- Key Ratio Summary
- Five years Financial Summary
- Accounting Policies
- Dividend/ Share Price Movements
- Value Added Statement
- Chairman's Report

Strategy – Corporate Goals or Objectives

- Actions to undertake in achieving goals
- Corporate position to ethical and environmental issues
- Social and Environmental commitments
- Events of the year

Market/ Marketing- Major Markets

- Dimension of Markets
- Forecasted Market Growth
- Marketing Strategy
- Distribution Channels

- Customer Mix

Human Capital- Number of Staff

- Employment Policies
- Working Conditions
- Valuation of Human Capital

Production Management – Major Products/ Services

- Changes in Production Methods and product Materials
- Quality of materials Consumed/ Investment in Production
- Life Cycle of Product

Determine Small and Medium Enterprise (SME) Internet Marketing Usage in the Tshwane Area, South Africa

Van Scheers Louise[1]

Abstract: The research is aimed to determine SME Internet marketing usage in the Tshwane area. The benefits of Internet marketing seem to be ignored by most SMEs. Social media is one of Internet marketing's tools and it seems that challenges prevent SME owners from using this tool effectively. A survey study method of research design has been selected for the research. The sample for the study comprised 200 SME owners who currently manage small businesses in the Tshwane area. To assess the internal consistency of the instrument, Cronbach's alpha was run and a reliability coefficient of 0.836 resulted. The instrument was validated through content validity. The instrument was structured and multi-chotomous in design covering demographic and research variable questions. Descriptive statistical analysis was employed to determine the SME Internet marketing usage in the Tshwane area. In general the SMEs in this area have a positive attitudes regarding Internet use. The capabilities of the Internet allow SMEs to use it as communication tool and marketing channel. The conducted research recommends that Internet marketing can be cost effective if the SMEs make use of their own social networks and use best practises that enable them to get their adverts or posts shared across social networks. The conducted research also recommends that SMEs with limited resources should start with using social media to enhance Internet marketing. YouTube as a marketing tool for Internet marketing is effective as well because the learning curve is low and cost involved is almost nil. Tshwane SMEs should use Internet marketing rather than traditional marketing to promote their businesses because these methods are cost effective.

Keywords: Internet marketing; Internet marketing usage; Cost effective marketing; Learning curve; Tshwane area

JEL Classification: M31

1. Introduction

The small and medium scale enterprises (SMEs) have contributed to the economic growth of the nations. They formed 96.8% of all companies in Africa and are considered to be the engine for society's development. This is because they play a significant part in employment and professional training of young people. Compared to big companies, they employ more women, young people and part-

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time employees. SMEs are closely connected with the region than large employers and therefore have significant influence on the region's development. Van Scheers (2011) observes that SMEs comprise over 90% of South African business operations and contribute to over 50% of South African employment and gross domestic product (GDP). The SME sector has shown some positive signs in South Africa, Mauritius and North Africa; Van Scheers 2011 stated that SMEs constitute 55% of all jobs. Research by Bowler, Dawood and Page (2006) revealed that 40% of new business ventures fail in their first year, 60% of businesses in their second year of operations, and 90% in their first 10 years of existence. A number of challenges have been identified as contributing to the failure of SMEs in South Africa and worldwide. Hussain, Si, Xie & Wang (2010) observe that SMEs are vital to the economies of all countries, specifically developing countries. Considering the competitive and challenging global environment, Herath & Mahmood (2013:43) advise that an extremely viable and dynamic SME sector is essential for the economic development of developing countries such as South Africa. Chong (in Ching & Ellis, 2004) observes that South Africa is following a trend of developing the SME sector. According to an ILO report (ILO, 2011), significant contribution of SMEs to national economic development has led to policy changes in developing countries including South Africa. The Department of Trade and Industry (DTI) report (South Africa, 1995) confirms that small businesses represent 98% of the total number of firms in South Africa, employ 55% of the country's labour force, contribute approximately 42% to total remuneration and 35% towards South Africa's GDP.

Despite the significance and importance of SMEs and their contribution to the economic growth of South Africa, SMEs are still faced with numerous challenges that inhibit growth (Hussain, et al. 2010). Apart from SME funding and limited access to finance, the Global Entrepreneurship Monitor Reports (GEM, 2012) noted that South Africa's SMEs also suffer from poor management and marketing skills. South Africa has one of the highest SME failure rates in the world due to these factors (Strydom, 2013:2863–2871). Ceglie and Dini (2005) emphasise that marketing decisions are essential to succeed as small business in the market sector and that successful marketing will generate crucial sales for sustainable SMEs. Unfortunately, marketing is only afforded a small percentage of the SMEs' investment budget due to the high costs of sustaining a business. As owner of a series of global commercial sites, the researcher has observed that marketing for small business is crucial to getting market coverage and market penetration. The costs of the market investment to the return on market investment are crucial to SMEs with very limited marketing budgets. Although they have limited marketing budgets, SMEs still need to use marketing tools to advertise their products. Secondary research conducted (Ceglie & Dini, 2005; Tan et al 2010; UN, 2012) indicates that Internet marketing may offer a solution to this problem. Internet marketing is when a SME only use Internet to market the business. Internet

marketing consists of online advertisements to drive traffic to an advertiser's website such as banner advertisements, pay per click (PPC), and targeted email lists (World Wide Worx (2012). However, it seems that the small business sector has been slow to enter the Internet marketing world. Kshetri (2011) mentions that social media platforms provide SMEs with an opportunity to communicate with customers directly which is an added strategic function that search engines and display networks cannot provide. The use of Internet marketing will enable SMEs to understand customers' needs. World Wide Worx (2012) indicates that 410 000 SMEs in South Africa have a website.

This research (World Wide Worx, 2012) shows that SMEs with a website are more likely to be highly profitable. However, limited research was conducted concerning usage of social media and Internet marketing of SMEs in South Africa. It seems that there is a gap in the literature and therefore this research aims to determine the usage of social media and Internet marketing of the Tshwane SMEs. Tshwane is the largest metropolitan municipality in South Africa and the third-largest city in the world after New York and Tokyo (Tshwane, 2013). This area contributes 34% to the South African economy although it occupies only 1,4% of the land surface of the country, and is home to 22% of the South African population. This area is an economical hub and motivated the researcher to conduct the research in the Tshwane area.

Determining the usage of Internet marketing of the Tshwane SMEs is a positive intervention in arresting failure and equally to ensure sustenance of the SME industry through the process of identifying the areas of Internet needs. Following the introduction, section two of the paper considered the review of literature, section three discussed the methodology of the paper, and section four presented the analysis, results and discussion while the last section dwelled on the conclusion and recommendations.

2. Literature Review

2.1 SMEs Defined

SMEs are defined in different ways with reference to the number of employees or to turnover (as in the National Small Business Act 1996, which also allows for variations according to industry sector) (South Africa, 1996). In South Africa, a 'small business' is officially defined in Section 1 of the National Small Business Act of 1996 as amended by the National Small Business Amendment Acts of 2003 and 2004 (South Africa, 1996) as a separate and distinct business entity. This includes co-operative enterprises and nongovernmental organisations, managed by one owner or more which, including its branches or subsidiaries, if any, is

predominantly carried on in any sector or sub-sector of the economy (South Africa, 1996).

The National Small Business Act categorises South African small businesses into the following distinct groups: the survivalist, micro, very small, small, and medium businesses. The term 'SMME' is therefore used to describe small, medium and micro-enterprises. However, in South Africa the terms 'SMME' and 'SME' are used interchangeably. In South Africa, the SME is defined by the number of employees per enterprise-size category combined with the annual turnover category, and the gross assets excluding fixed property. The National Small Business Act (Act 102 of 1996) provides definitions for various SMME categories as identified in Table 1.

Table 1. Definitions of SMEs given in the National Small Business Act.

Enterprise Size	**Number of employees**	**Annual turnover**	**Gross assets, excluding fixed property**
Medium	Fewer than 100 to 200, depending on industry	Less than R4 million to R50 million, depending upon industry	Less than R2 million to R18 million, depending on industry
Small	Fewer than 50	Less than R2 million to R25 million, depending on industry	Less than R2 million to R4,5 million, depending on industry
Very small	Fewer than 10 to 20, depending on industry	Less than R200 000 to R500 000, depending on Industry	Less than R150 000 to R500 000, depending on industry
Micro	Fewer than 5	Less than R150 000	Less than R100 000

Source: Dockel and Ligthelm, (2012)

As indicated in table 1 the small enterprise has fewer than 50 employees. Currently, there is a lot of focus in South Africa on the development of SMEs. SMEs in a wide variety of fields and industries are regarded as a major force in economic development and wealth creation. In South Africa, the importance of an entrepreneurial-driven economy is becoming increasingly important, particularly because of the employment-creation opportunities it offers. Globally, the SME sector is regarded as the main driving force in economic growth and job creation but unfortunately, these SME owners suffer from a lack of marketing skills (Lunsche & Barron, 2010).

2.2 Marketing in SMEs Defined

Marketing for SMEs in theory is different from the prescribed approach taken for large organisations. SMEs are challenged to compete with large organisations in today's global marketplace. The technologies that can be applied to market SME products and services are relatively simple with the focus on the impact on the customer relationship, as noted by Harrigan (2011). Dockel and Ligthelm, (2012) showed that SMEs are confronted with several issues, sales and marketing being the most pressing. From their studies, the level of importance in descending sequence are sales and marketing at 40,2%, followed by human resources at 15,3%, general management at 14,3% and operations at 8,6%. SMEs must constantly innovate around their existing business processes to survive, especially in their marketing activities (Harrigan, 2011). In the next section, internet marketing will be defined and its different facets described.

2.3 Internet Marketing Defined

Online marketing, also referred to as online advertising, consists of activities using the Web or email to drive direct sales via electronic commerce, or creating sales leads from websites or email marketing (Dockel & Ligthelm, 2012). Internet marketing is a diverse area with many tools to bring customers to the SMEs' products and services. Figure 1 shows the breadth of marketing possible on the Internet to date.

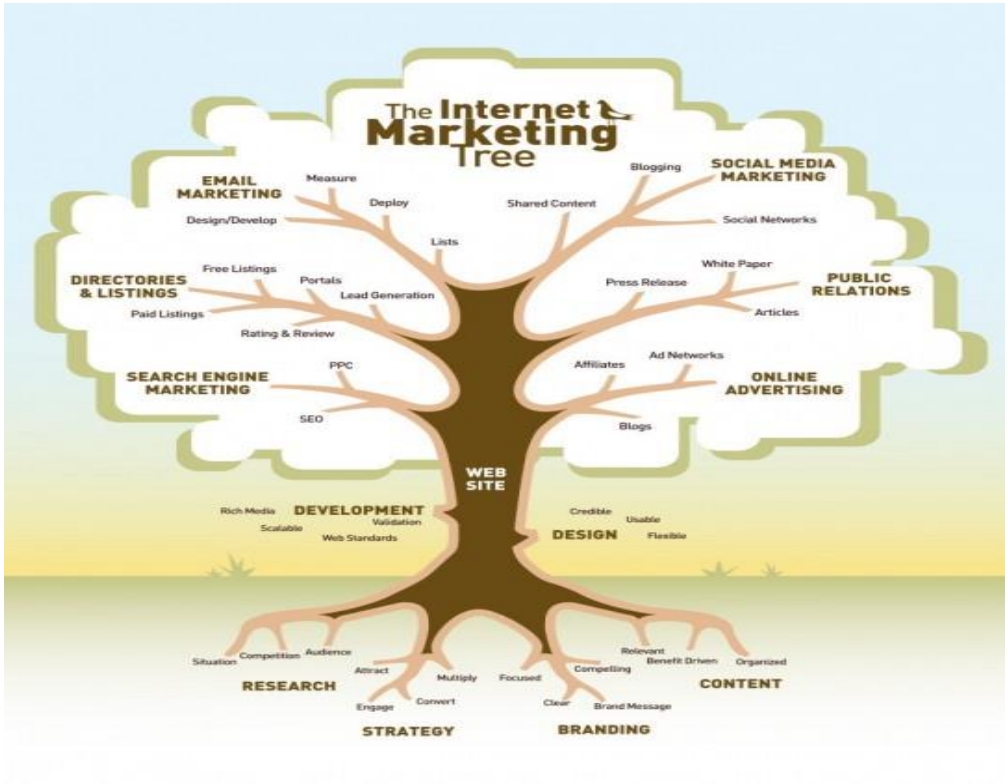

Figure 1. The Internet Marketing Tree

Source:Mainline Media, 2009.

As indicated in figure 1, the main tools for Internet marketing are:

1. Search engine marketing (Google, Bing, Yahoo etc.);
2. Directories and listings;
3. Email marketing;
4. Social media marketing;
5. Public relations;
6. Online advertising.

These Internet marketing tools are shown in the tree as branches. The main part of the tree is made of a website where clients come to read and be converted to a sale. Here, the following is important:

- Development (The approach and technology here is crucial to ensure all Internet users are reachable and servable)

- Design (Ensuring your customer or client base experience your processes and branding as a user-friendly and enjoyable experience is crucial to conveying the marketing message which facilitates conversion of a lead to a sale)

The roots of the tree show the methodologies and practices that ensure any Internet marketing approach is successful. They are:

- Conduct research to understand the target market and the marketing message to enable a conversion from lead to sales, as well as the competition's approach and its influence on the strategy.
- Strategy to attract the target market that will buy the product or service.
- Communication strategies to engage and convert potential leads to a sale.
- Branding of the products and the medium used to reach your target market.
- 'Content is king' is a very true catch phrase in Internet marketing. Relevant, value-added driven information is important not just to win over your customer or clients' trust, but also in some cases it is a necessity to some of the Internet instruments' usage.

Mutula and Mostert (2011) indicate that both domestic and global marketing sales depend on the targeting of specific groups, which usually involves the use of Internet search engine and display companies providing advertising and routing to your company's sales page or contact details. Tan et al (2010) observes that it seems although most SMEs have access to Internet, they still experience challenges in using it. There are five main issues that the previous studies (UN, 2012) noticed with traditional Internet advertising using search engine and display networks:

- The cost and the difficulty in targeting specific groups according to your sales funnel.
- Understanding and applying keyword search methodology and SEO (Search Engine Optimization) – most SMEs do not have the knowledge or the time to gain this knowledge to apply keyword and SEO successfully.
- Most sites set up by SMEs do not provide adequate customer or consumer experience to ensure high conversion.
- Most SME owners do not understand how to approach Internet marketing and Internet customer interaction technologies.
- Even SMEs that do have budgets to outsource the building of a website, they usually do not get the service and technology to enable them to fully service both the desktop, tablet and mobile market.

The objective of this study is to show the usage of Internet marketing, specifically by using social media marketing, by SMEs to sustain business. In the next section, social media marketing will be discussed in detail and its overall importance to SMEs operating domestically and globally. It is clear from figure 1 that social media marketing is one of the branches of Internet marketing.

2.4. Is Internet Marketing Usage Crucial for Small Businesses?

Internet marketing refers to a set of powerful tools and methodologies used for promoting products and services through the Internet. Internet marketing is ideal for SMEs, as SMEs, more so than larger organisations, focus on drawing the attention of customers. Thus, Internet marketing fosters drawing customers towards SMEs, as deeper audience engagement is possible (Bakeman & Hanson, 2012, p. 20). In other parts of the world, SMEs have been slower to adopt social media as a marketing tool (Bakeman & Hanson, 2012, p. 106). Theunissen (2012) suggests that organisations should implement a basic yet effective social media and Internet marketing strategy involving Facebook, Twitter, a blog and an updated and user-friendly website. The social media strategy variables can be used to create brand awareness, promote offers, provide information, and provide interaction opportunities with consumers and a means to engage with customers.

However, designing and implementing an attractive website does not guarantee individuals will visit it; regular updates, value-added content and marketing of the website online is the key to drawing potential clients to visiting an SME's website. Theunissen (2012, p. 1) mentioned that: "The vital part of any Internet marketing activity for SMEs is that it enables entrepreneurs to have one-on-one discussions with people who actively express an interest in their companies. As such, if they're managed properly, they can act as a 'call centre' for their operations." The question can be asked what challenges exist in adopting Internet marketing in small business.

2.5 Challenges to Adopting Internet Marketing in Small Business

As the researchers has mentioned previously, SMEs do not have the same resources as those of large organisations to promote themselves with the use of Internet marketing. Larger organisations have human capital and financial means to create and implement a social media strategy to enable Internet marketing (Bakeman & Hanson, 2012, p. 107). Internet marketing has taken advertising to a whole new level by using social media activities. In a study carried out by Johnstone and Wright (2004, p. 228) on the barriers affecting the implementation of Internet systems and procedures in different countries, it was revealed that the high cost of installing infrastructure; high price of technology, large investment

requirements and liquidity constraints forms the largest barrier. Uncertain return on investment (ROI); Limited worker expertise caused by a general shortage of highly skilled workers and insufficient training; Lack of management vision, support and enthusiasm in the adoption of Internet technology, Inability to outsource IT expertise; and Bad experiences in the past are other challenges. Therefore, despite the affordability of social media networks, the time factor, lack of skills and the learning factor, whereby investing time to learn and manage the social media page, Internet marketing may still be out of reach of the SMEs. However, SME owners do understand the value of Internet marketing in enhancing productivity and competitiveness (Bakeman & Hanson, 2012, p. 107). In the Tshwane area not much research were conducted concerning SME Internet marketing usage. Therefore the aim of the current study is to determine SME Internet marketing usage in the Tshwane area. The study therefore seeks to answer the following question: What is the Internet marketing usage rate of SMEs in the Tshwane area?

3. Methodology

To determine the SME Internet marketing usage in the Tshwane area, a survey research was designed. Primary data were collected from SMEs in the city of Tshwane of all sectors. The population of study was 200 SMEs in the Tshwane area. In selecting the sample, simple random sampling techniques were adopted by using a list of registered SMEs from the Tshwane municipality. The questionnaire was developed based on existing literature and pretested with five small businesses to ensure clarity and comprehension, as well as to gauge average completion time. Minor revisions were made in question wording and order as a result of the pretest. Because of careful monitoring, the total of 200 questionnaires were returned representing 100% response rate. To assess the internal consistency of the instrument, Cronbach's alpha was run and a reliability coefficient of 0.836 resulted. The instrument was validated through content validity. The instrument was structured and multi-chotomous in design covering demographic and research variable questions. Descriptive statistical analysis was employed to determine the SME Internet marketing usage in the Tshwane area. The outcome of the determination was used to make decision.

4. Results, Analysis and Discussion

4.1. Characteristics of Respondents

Age of the Tshwane SME respondents

None of the respondents were under 18 years of age. The largest proportion of the respondents was older than 50 years while the rest of the respondents were relatively equally distributed among the other age groups.

Gender of the Tshwane SME

Women are increasingly joining the work force, but because of child-rearing duties lack formal education and work experience. They are also too busy with family duties, therefore most SMEs are owned by males. The results are revealed in Figure 2.

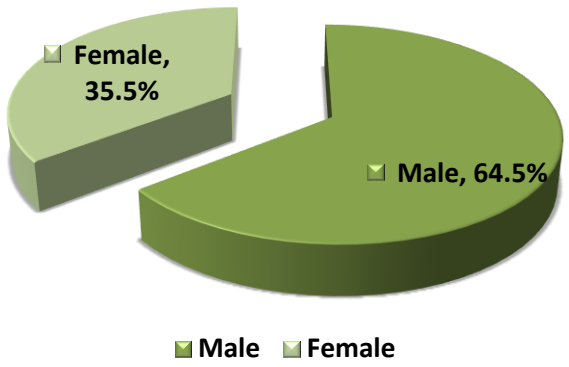

Figure 2. Gender of the Tshwane area SMEs respondents

As Figure 1 confirms, almost two-thirds (64,5%) of the respondents were male. Only 35,5% of the respondents were women, which validates the secondary research conducted.

Education of the Tshwane SMEs

Education plays an important role in the success of an SME, as highlighted in the introduction. The results of the research are illustrated in Figure 3.

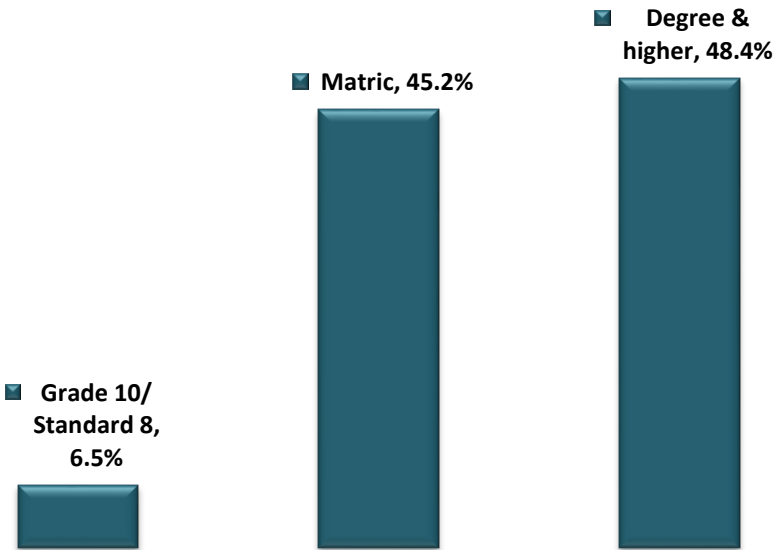

Figure 3. Education of Tshwane area SME respondents

Figure 3 substantiates that most SME owners in Tshwane received good education as only 6,5% of the respondents had an educational level of less than grade 12. The proportion of respondents with a graduate education and higher (48,4%, n=15) was only slightly larger than those with grade 12 (45,2%, n=14).

4.2. SME Internet Marketing Usage

The primary objective of this study was to determine Internet marketing usage of Tshwane SMEs because that will give the researchers an indication of the level of Internet marketing used. As the secondary research has established, Internet marketing plays an important role in the survival of SMEs both globally and nationally. Questions 10 to 21 of the field report were asked to determine Tshwane SME Internet marketing use. Questions Q7, Q8 and Q9 of the filed report disclosed whether Tshwane SMEs consider that Internet marketing should be used in small businesses (question7); Tshwane SMEs have access to the Internet (question 8); Tshwane SMEs currently marketed through Internet marketing (question 9). The results are illustrated in Figure 4.

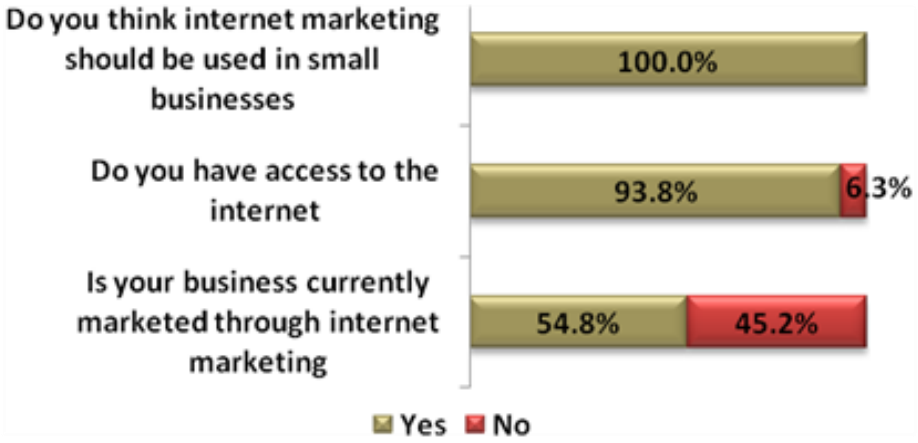

Figure 4. Tshwane SME internet curent usage

Source: 2015 Field report

Figure 4 shows that all the respondents think that small businesses should utilise the Internet for marketing while just over half (54,8%, n=17) of the respondents are currently marketed through the Internet. Only 6,3% of the respondents do not have access to the Internet. Although the results show that most Tshwane SMEs have access to Internet, only 54,8 % of the respondents use Internet marketing to promote their businesses. This shows that there is definitely space for improvement. The non-parametric Wilcoxon rank sum test will be used to determine whether current Internet marketing has an effect on the overall Internet activity levels of the respondents (Tables 2 and 3).

Table 2. Wilcoxon rank sum test SME owners

Ranks

	9. Is your business currently marketed through internet marketing? 1= Yes, 2= No	N	Mean Rank	Sum of Ranks
Internet activity index	Yes	17	18.03	306.50
	No	12	10.71	128.50
	Total	29		

Table 3. Wilcoxon rank sum test SME respondents

Test Statistics

	Internet activity index
Mann-Whitney U	50.500
Wilcoxon W	128.500
Z	-2.288
Asymp. Sig. (2-tailed)	.022
Exact Sig. [2*(1-tailed Sig.)]	.021[b]

a. Grouping Variable: 9. Is your business currently marketed through internet marketing. 1= Yes, 2= No

b. Not corrected for ties.

Tables 2 and 3 indicate that the Wilcoxon rank sum test revealed a significant difference between respondents who are currently marketing on the Internet and those who don't ($z=-2.288$, $p<.05$). Respondents who currently market on the Internet (M rank=18.03, n=17) exhibit a higher Internet activity level than that of respondents who do not currently market on the Internet (M rank=10.71, n=12). Therefore, the results indicate that respondents currently using the Internet for marketing show a higher level of business activities.

Increase in business productivity as a result of Internet marketing

Question 10 of the field report was asked to establish whether there was an increase in sales, product awareness, consumer support and overall productivity of the SME as a result of Internet marketing communication efforts**.** The result is disclosed in Table 4 and Figure 5.

Table 4. Increase in business productivity as a result of Internet marketing

	1% to 20%	21% to 40%	41% to 60%	61% and above	Total
What is the estimated percentage (%) Increase in sales	16	3	6	1	26
	61.5%	11.5%	23.1%	3.8%	100.0%
What is the estimated percentage (%) Increase in product awareness	11	4	4	3	22
	50.0%	18.2%	18.2%	13.6%	100.0%
What is the estimated percentage (%) Increase in customer support	12	2	5	3	22
	54.5%	9.1%	22.7%	13.6%	100.0%
What is the estimated percentage (%) Increase overall productivity of SME	9	4	8	1	22
	40.9%	18.2%	36.4%	4.5%	100.0%

Source: Question 10 of field report

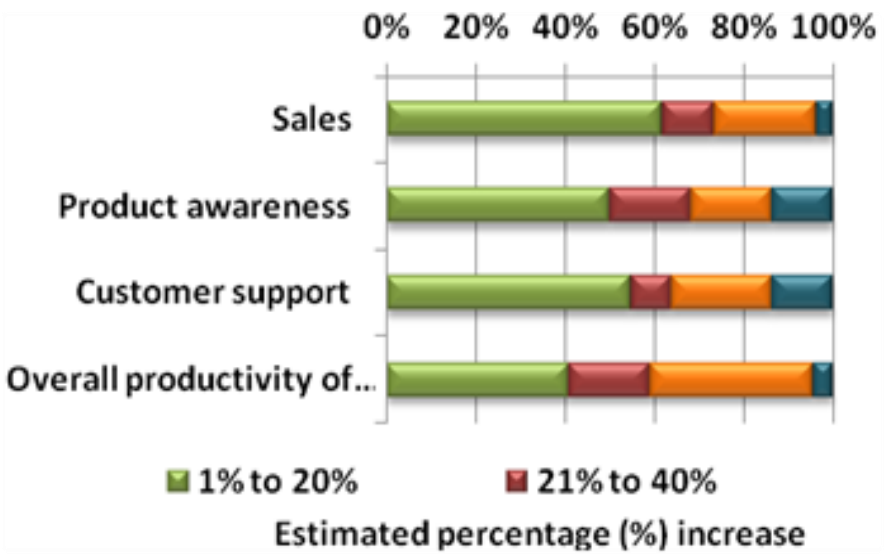

Figure 5. Increase in business productivity as a result of Internet marketing

Source: Question 8 of field report

Table 4 and Figure 5 give an indication of the increase in business productivity as a result of Internet marketing. The respondents report a 1% to 20% increase in all four of the listed areas, ranging from 40,9% (n=9) for overall productivity to 61,5% (n=16) for sales. Larger proportions of respondents reported a 41% to 60% increase in all four of the listed areas than those who reported 21% to 40% increase in the listed areas. Some respondents also reported a 61% and above increase in all four listed areas. These results are indications of the success with which SMEs employ the Internet to market their businesses. Multivariate results of the data reflect the results of question 10 in Figure 6.

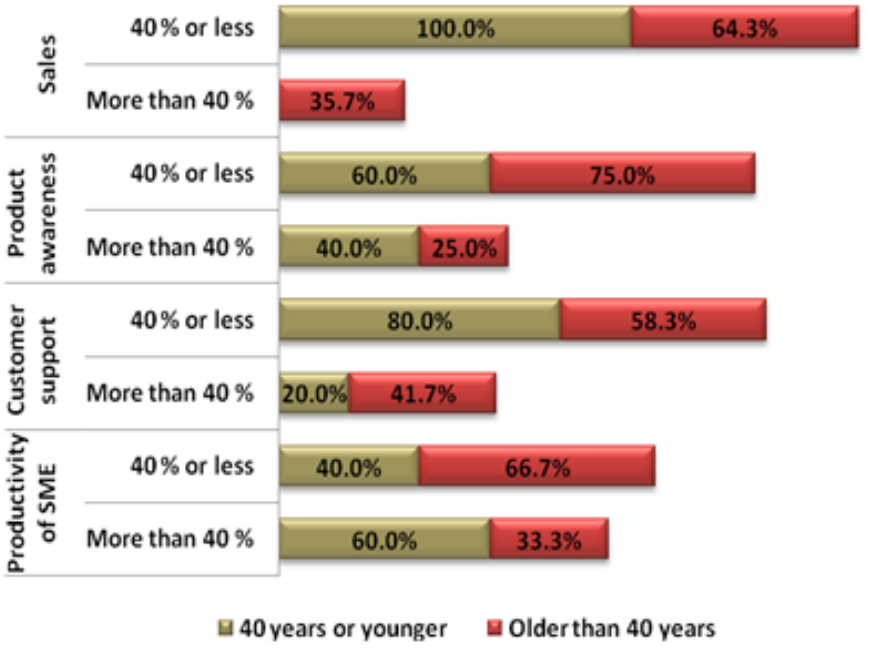

Figure 6. Increase in business productivity as a result of Internet marketing

Source: Question 9 of field report

Figure 6 illustrates that the respondents report an increase in sales, product awareness, consumer support and overall productivity. Age seems to have an effect on the percentage increase in sales, product awareness, consumer support and overall productivity. In the case of sales and customer support, larger proportions of the respondents that are 40 years or younger reported increases of 40% or less while larger proportions of the respondents older than 40 years reported increases of more than 40%. In the case of product awareness and overall productivity, larger proportions of the respondents older than 40 reported increases of 40% or less while larger proportions of the respondents that are 40 years or younger reported increases of more than 40%.

Thus, on average it seems that older respondents are more successful in stimulating better sales and customer support through their internet marketing communication efforts than younger respondents, while younger respondents are more successful in increasing product awareness and overall productivity of their SME than older respondents. The data analysed according to gender to indicate sales awareness, customer support and productivity after Internet marketing usage is shown in Figure 7.

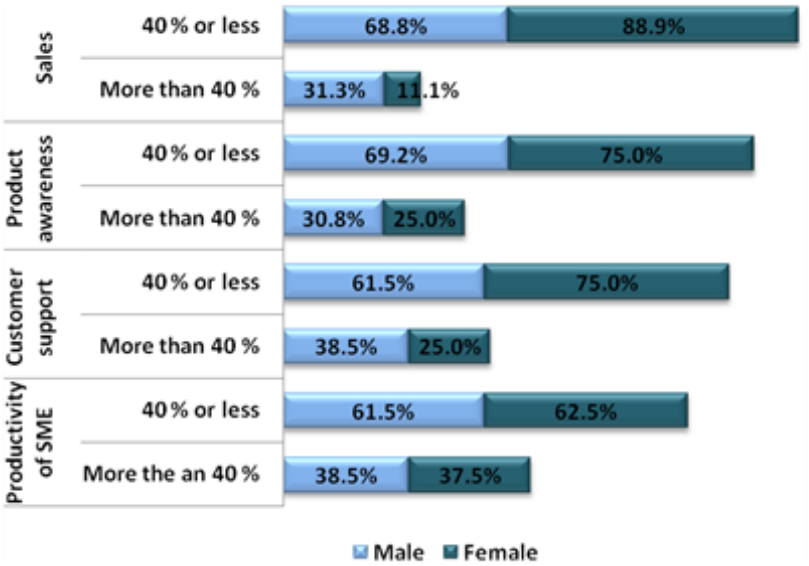

Figure 7. Increase in business productivity as a result of Internet marketing

Source: Question 10 of field report

Figure 10 shows that on average, female respondents are more successful in increasing sales, product awareness and consumer support with up to 40% due to their internet marketing communications, while males seem to be able to effect increases of over 40% in sales, product awareness and consumer support. Both males and females seem to be equally successful in increasing overall productivity of the SME in both the 40% and lower and the over 40% category (Figure 10). A multivariate analysis of comparing the education level of respondents and Internet usages are reflected in Table 5 and Figure 8 below.

Table 5. Multivariate analysis of comparing the education level of respondents and internet usages

		Grade 10/ Standard 8	Matric	Degree & higher	Total
What is the estimated percentage (%) Increase in sales	40 % or less	2 100.0%	6 75.0%	10 66.7%	18 72.0%
	More than 40 %	0 0.0%	2 25.0%	5 33.3%	7 28.0%
Total		2	8	15	25
What is the estimated percentage (%) Increase	40 % or less	1 100.0%	6 85.7%	7 53.8%	14 66.7%

in product awareness	More than 40 %	0 0.0%	1 14.3%	6 46.2%	7 33.3%
Total		1	7	13	21
What is the estimated percentage (%) Increase in customer support	40 % or less	1 100.0%	6 75.0%	6 50.0%	13 61.9%
	More than 40 %	0 0.0%	2 25.0%	6 50.0%	8 38.1%
Total		1	8	12	21
What is the estimated percentage (%) Increase overall productivity of SME	40 % or less	1 100.0%	5 62.5%	6 50.0%	12 57.1%
	More than 40 %	0 0.0%	3 37.5%	6 50.0%	9 42.9%
Total		1	8	12	21

Source: Question 10 of field report

It seems that (Table 5) on average, educational level has an effect on how successful the respondents are to increase their sales, product awareness, consumer support and overall productivity through their Internet marketing communications. More specifically, the proportions of respondents that increase their sales, product awareness, consumer support and overall productivity by 40% or less, decrease as the level of education increases. The inverse is true for the respondents who increase their sales, product awareness, consumer support and overall productivity by more than 40%. In fact, none of the Grade 10 / Standard 8 respondents increased their sales, product awareness, consumer support and overall productivity by more than 40%. Figure 12 shows it graphically.

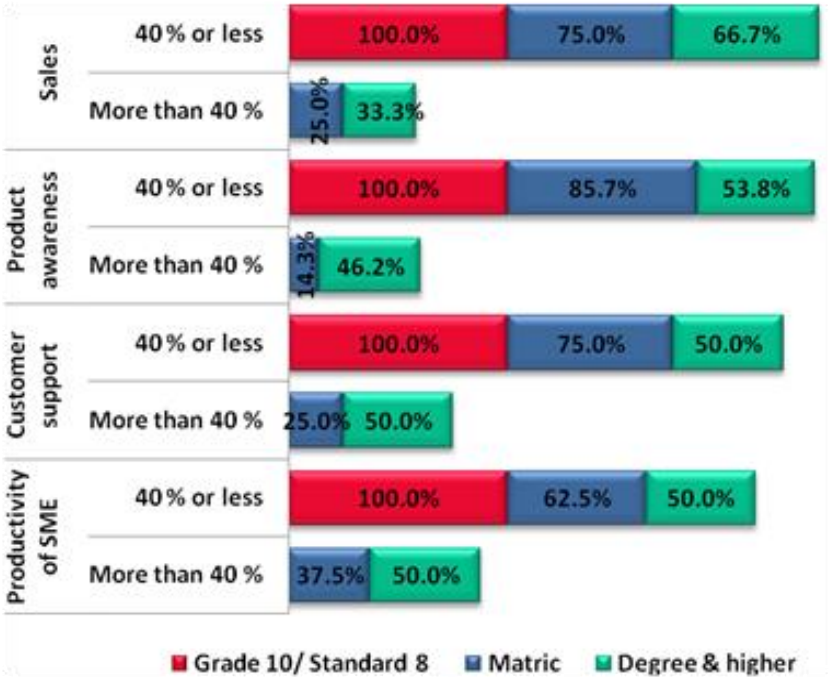

Figure 8. Multivariate analysis of comparing the education level of respondents and internet usages

Source: Questions 4 and 8 of field report

Internet activities – frequency

Question 11 inquiries into Internet activities, frequency and tools that Tshwane SMEs are using. The results are shown in Figure 9.

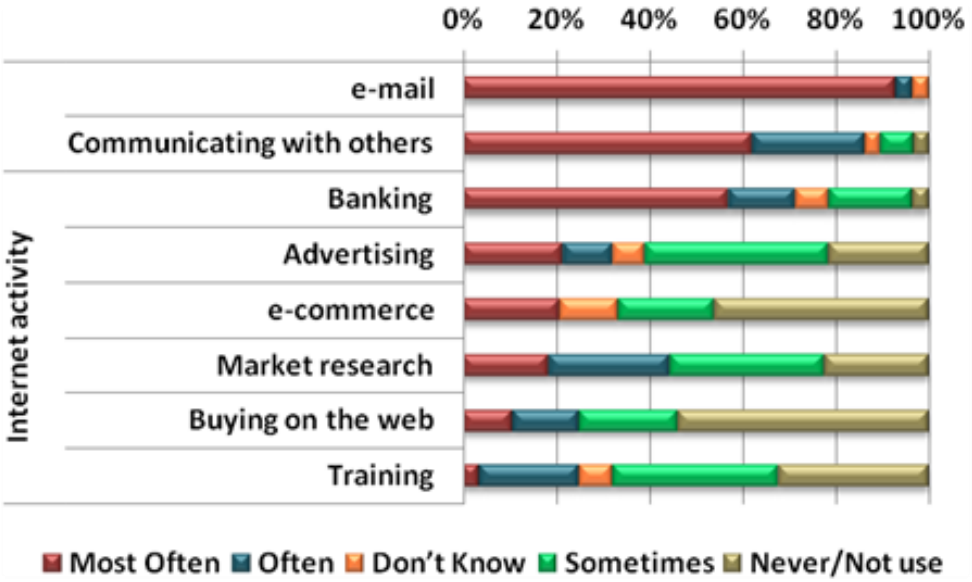

Figure 9. Internet activities, frequency and tools

Source: Question 11 of field report

It is clear from Figure 14 that email is the activity most often used by almost all (92.9%, n=26) respondents, followed by communicating with others (62,1%, n=18) and banking (57,1%, n=16). Email is also the one activity for which none of the respondents reported that they never, or even sometimes, use. Although some respondents also engage in all the other activities most often, the proportions of those who do vary from 3,6% (n=1) for training to 21,4% (n=6) for advertising.

The proportions of respondents who appear not to know enough of the Internet to know what they are doing are small, while for market research and buying on the web, nobody reported that they did not know. Buying on the web (53,6%, n=15) and e-commerce (45,8%, n=11) are the activities for which the largest proportions of respondents reported that they never engage in them.

Table 6. Normality of the index

Normality of the index

Descriptive

			Statistic	Std. Error
Internet activity index	Mean		12.83	.937
	95% Confidence Interval for Mean	Lower Bound	10.92	
		Upper Bound	14.75	
	5% Trimmed Mean		12.89	
	Median		12.50	
	Variance		26.351	
	Std. Deviation		5.133	
	Minimum		0	
	Maximum		23	
	Range		23	
	Interquartile Range		7	
	Skewness		-.046	.427
	Kurtosis		.260	.833

Table 7. Kolmogorov-Smirnov

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Internet activity index	.076	30	.200*	.979	30	.804

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

In both the Kolmogorov-Smirnov and the Shapiro-Wilk tests (Table 7), the null hypothesis the distribution of the internet activity index conforms to a normal distribution. With the p-value (sig.) > .05, the null hypothesis cannot be rejected. Thus, as can also be seen in the visual representations of the distribution, this variable can be assumed not to deviate significantly from a normal distribution. The histogram (Figure 10) shows the mean and standard deviation of the respondents.

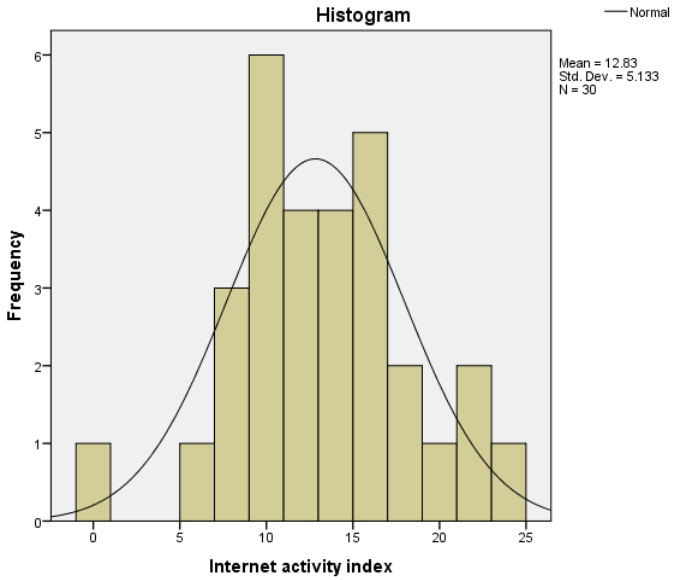

Figure 10. Mean and standard deviation of the respondents

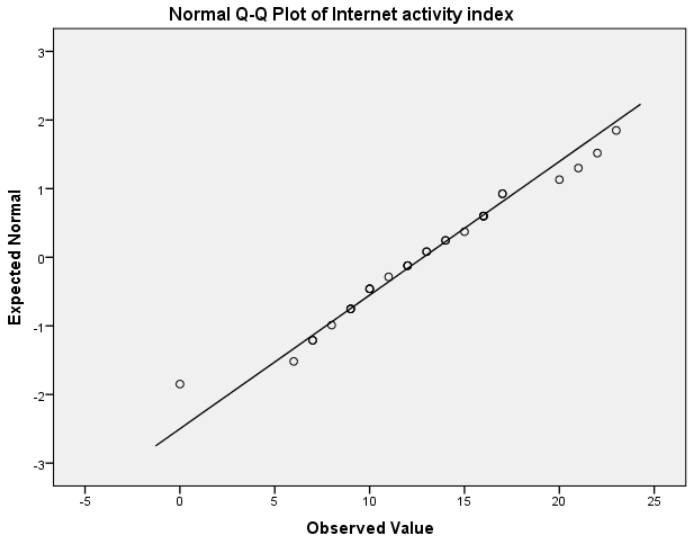

Figure 11. Mean and standard deviation of the respondents

The mean and standard deviation of the respondents show a linear positive correlation which indicates a strong linear relationship between the variables.

4.3. Discussion

The significance of this study is that it reveals to the Tshwane SMEs owners underlying issues surrounding Internet usage. As such, it serves as an indicator of the amount of improvement yet to be effected. Conducted research indicated that Internet is an important tool that Tshwane's SMEs can use to improve business sustainability. The results reveal that the largest proportion of the respondents was older than 50 years while the rest of the respondents were relatively equally distributed among the other age groups. Almost two-thirds (64,5%) of the respondents were male while only 35,5% of the respondents were women which validates the secondary research conducted in chapter two. Most SME owners in Tshwane received good education as only 6,5% of the respondents had an educational level of less than grade 12.

The primary objective of this study was to determine Internet marketing usage of Tshwane SMEs. All the respondents believe that small businesses should utilise the Internet for marketing while just over half (54,8%) of the respondents are currently marketed through the Internet. Although the results show that most Tshwane SMEs have access to Internet, only 54,8 % of the respondents use Internet marketing to promote their businesses.

The non-parametric Wilcoxon rank sum test was used to determine whether current Internet marketing has an effect on the overall Internet activity levels of the respondents. The Wilcoxon rank sum test revealed a significant difference between respondents who are currently marketing on the Internet and those who don't ($z=-2.288$, $p<.05$). Respondents who currently market on the Internet (M rank=18.03) exhibit a higher internet activity level than that of respondents who do not currently market on the Internet (M rank=10.71). Therefore, the results reveal that respondents currently using the Internet for marketing show a higher rate of business activities.

The respondents reported an increase in sales, product awareness, customer support, and overall productivity of the business as a result of Internet marketing. Age seems to have an effect on the percentage increase in sales, product awareness, consumer support and overall productivity. In the case of sales and customer support, larger proportions of the respondents that are 40 years or younger reported increases of 40% or less while larger proportions of the respondents older than 40 years reported increases of more than 40%. In the case of product awareness and overall productivity, larger proportions of the respondents older than 40 years reported increases of 40% or less while larger proportions of the respondents that are 40 years or younger reported increases of more than 40%.

The results also revealed that older respondents are more successful in stimulating better sales and customer support through their Internet marketing communication efforts than younger respondents, while younger respondents are more successful

in increasing product awareness and overall productivity of their SME than older respondents.

The results also show that on average, female respondents are more successful in increasing sales, product awareness and consumer support by using Internet marketing tools. It seems that on average educational level has an effect on how successful the respondents are to increase their sales, product awareness, consumer support and overall productivity through their Internet marketing communications. More than half (53,3%) of the respondents do have a website for their SME business. The most important motivating reasons to use Internet marketing was the possibility to have 24-hour accessibility and the possibility to provide more up-to-date information, followed by the possibility of providing clients with information more quickly.

The results also reveal that the marketing communication element that is used at the highest rate is creating awareness for their product or service, followed by attracting clients to their business through personal selling and relying on word-of-mouth promotion (social media tools). The marketing communication element that is used least often is using sales promotion to increase their business revenue. The two elements that are used by all respondents at various rates are personal selling and word of mouth promotion.

5. Conclusion and Recommendations

Based on the analysis and the findings thereof, this paper concludes that Tshwane SMEs should use Internet marketing to promote their businesses because it is cost effective. 'Unauthorised access to sensitive or proprietary information and limited verification of authorship of messages' is mentioned as the largest challenge to using Internet marketing. Tshwane SMEs should rather utilise social media as Internet marketing tool, as the learning curve and cost can be low in comparison to other Internet marketing tools. The conducted research recommends that Tshwane SME owners utilise Youtube channels to educate and train themselves on the effective usage of Internet marketing instruments. The conducted research would also recommend display networks, email marketing and social media as marketing tools. From the conducted research it is obvious SMEs have resource limitations. It is therefore recommended that SMEs with limited resources start with social media and YouTube as a marketing tool, as the learning curve is low and cost involved almost nil. It's also the easiest Internet marketing tool to use cost effectively. Search and display networks have a high learning curve and are costly to operate if the marketing operator is not skilled in the marketing use of search and display networks. The researches warn that unskilled use of search and display networks (Bing, Yahoo and Google) can easily result in negative returns on marketing investments and should rather be avoided.

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Diversity and Specialization: Public Policies Framework for Innovation

Sabina Cristiana Necula[1]

Abstract: This study focuses on the problem of absorbing the researches and outcomes of innovation processes into the economy. Our **objective** was to address this problem by identifying the main factors that are related with state's support on innovation processes through public policies. Our **approach** took into consideration the case of Romania because our study is concentrated on identifying factors in order to discuss later solutions. We used public data available from the National Institute of Statistics, the National Council of Scientific Research, and from the National Authority for Scientific Research. Our **results** show that the efficiency of absorption consists in the right balance between researches diversity and researches specialization. We also found that state's public policies influence the respective balance. The **implications** that our study identified show that the efficiency of research and development public policies relates to participants' integrity and state's leadership. The political will represents the social innovation that is necessary in the first place for those public policies to be efficient.

Keywords: researches' diversity; specialization; innovation; state; public sector

JEL Classification: O30; O31; O38

1 Introduction

The aim of this research is to show that the absorption of researches into the economy is influenced by state's research and development (R&D) public policies. The subject presents importance for sustainable development. The motivation is given by the interests for disparities' elimination and emerging. This study investigates the relationship between state and innovation processes. It demonstrates that Romania's state institutions are suffering from a lack of vision, a lack of political will, and a lack of action concerning innovation. Our work concentrated on the connection between public sector policies and innovation processes. We identified two major areas of public policies intervention: the lack of specialization and the great diversity of researches. We tend to have educated

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students, but no specialists and we tend to have a lot and diverse researches without human resources, facilities or proper public policies to implement them.

The main lever by which the state can intervene in support of innovation processes is the allocation of funds for R&D. As theories and practice have shown, another important lever is represented by a set of public policies that the state initiates, maintains, and improves by managing development strategies. However, how much must the state interfere in this creative innovation process is a subject of an indirect action, especially because the creativity must not be the subject of formalization. As Jürgen and Vladislav (2012) noted, the spontaneous order enables civilization by applying consensus to abstract rules rather than to specific outcomes. Nowadays, we assist to an excessive formalism required for innovation process outcomes, and in the same time, we observe that instead of an excessive formalism, there is a need of a strategic vision and of public policies for innovation.

The existing studies focus on the idea that, in the future, the priority given to public policies that sustain the development of new products and services will be higher than the priority given to financing researches of the public R&D units.

Even so, we oppose this idea by sustaining the importance of human resources. The human resource factor presents the main importance for innovation processes. Since the process of forming generations takes years, it should be noted that ensuring stability and predictability of the entire public sector is essential for supporting innovation processes. But what is the cost for stability and predictability of state's public policies? Could it be a political cost? How much affect this political cost the public action? It is not sufficient to have public policies, although Romania does not have proper public R&D policies, but it is important to have public actions implemented according to stable public policies. This is the framework that we establish for our study.

As a solution to the problem of absorption we propose the analysis of the main actions taken by public decision makers to identify factors.

2. Related Work

In order to discuss differences of our approach we present the related achieved work in the field of innovations' absorption and public policies.

There are three significant sources of economic development (Petrakos, G., Arvanitidis, P. and Pavleas, S., 2007, p.4): new knowledge (Romer, 1990, pp. 71-102), innovation (Aghion and Howitt, 1992, pp. 323-351) and public infrastructure (Barro, 1990, 103-125). The political factor has an essential importance in assuring long term economic development. The endogenous economic models sustain that

convergence is not possible. The follower countries combine low rates of population growth with high rates of investment, but still low rates of R&D. They seem more dependent of knowledge diffusion than of knowledge creation (Verspagen, 1983, pp. 42-44).

The institutionalism underlined the role of public sector innovation (Matthews, 1986, pp. 903-918; Jutting, 2003, pp. 210). The economic sociology underlined the importance of cultural factors (Granovetter, 2005, pp. 33-50; Granovetter, 1985, pp. 481-510). The political science underlined the importance of political factors (Brunetti, 1997, pp. 163-190). Another studies underlined the importance of the geographic factor (Gallup, Sachs and Mellinger, 1999, pp. 179-232) or the demographic factor (Kalemli-Ozcan, 2002, pp. 411-439).

The importance of diversity and specialization of economic activities has been treated by several scientific papers and studies. Feldman and Audretsch (1999, pp. 409–429) argue that diversity is what determines technological change and economic growth. This is one reason why the world's governments have always funded projects that addressed interdisciplinary problems (Keller, 2001, pp. 547–555; Van der Vegt, 2005, pp. 532–547).

Innovation is considered an essential source for industrial development, economic growth, and quality of life (Cardinal, 2001, pp. 19–36; Romer, 1990, pp. 71–102). Innovation is in a direct relationship with scientific research (Griliches, 1980; Lim, 2004, pp. 287–321). Thus, knowledge has always been regarded as an important antecedent for the scientific knowledge. The studies suggest that there is a positive relationship between diversity and innovation. Table 1 presents the main studied ideas, the authors, and the type of state's intervention through public policies.

Table 1. Specialty studies related to diversity and innovation (private sector) and public policies that state can use

The type of study	Author(s)	Public policy
the *diversity of multicultural teams* is associated with positive outcomes, such as increased levels of innovation, creativity, and problem solving	Adler (2002)	social inclusion lifelong learning equal opportunities supporting R&D youth policy
regions with high cultural diversity have high levels of development and innovation	Niebuhr (2006, p.1)	
innovation is positively associated with the presence of a *balance between genders*	Gratton (2007, p. 1–10)	
diverse teams tend to perform better or worse than homogeneous teams	DiStefano and Maznevski (2003, pp. 1–3)	

The diversity is very important, also because diversity addresses the perspective on science, the problem solving patterns, the approaches taken in research, designing research plans, and the interpretation of experimental results.

The countries can benefit of the results obtained by other countries without having high R&D costs (Coe and Helpman, 1993, p.1). The United States are responsible for the main part of R&D expenses at the OECD level (Englader and Gurney, 1994, pp. 49-109).

We can say, in summary, that to achieve innovation, there is need of knowledge. The diversity determines innovation and economic growth. State levers that can occur are a good education, an open, excellent, and attractive research system, and the promotion and support for markets of innovative products and services.

3. Problem Statement

In a report of Romanian Presidential Administration from 2007, it states that "the education and research system of Romania is not able to support a prosperous and competitive economy. Maintaining the current education system in Romania can endanger the competitiveness and prosperity of the country. This system has four main issues: ineffective, irrelevant, unfair, and poor. The management of primary and secondary schools was overly politicized, thereby preventing the accumulation of know-how and training professional managers. System inertia is huge. Investing in early education is the most profitable investment in education, with the largest individual and social benefits and with the lowest opportunity costs. Decentralization of the education system lacks action; decentralization delay will cause the system to become more inert. The worst thing to do is a massive injection of money into an unreformed education system" (The Romanian Presidential Administration, 2007).

There is absolutely no wonder that young people have low expectations and high unemployment rates. What is alarming is that many of them leave the country to work abroad. The curricula remain outdated and inadequate to labor market needs. Education remained informative, although many laws have specified the need of acquiring competences. The level of expenses for education is less than a half of the average European level, and the effects caused by different levels of development between urban and rural areas is alarming.

An ideal and generally accepted situation for our research problem is that where the trend effects in the economy by harnessing technological innovations is positive and has a positive climb higher than the trend of constant efforts of public sector involvement in supporting innovative processes, as shown in Figure 1.

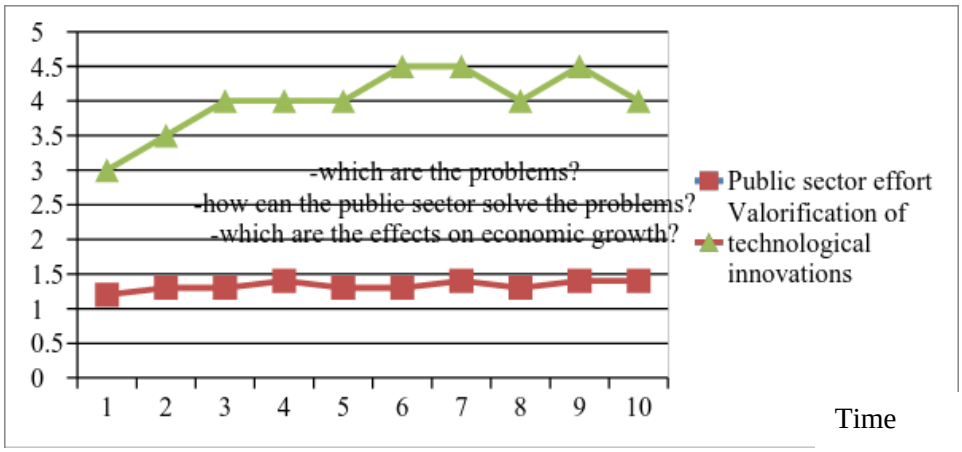

Figure 1. The ideal situation of public sector involvement in supporting innovation processes and the main research problems

4. Our Approach

Our concern to identify the type of action that state must take in the problem of establishing public policies related to innovation leaded us to address some legitimate questions that are necessary to emphasize the empirical statements which stand at the basis of formulating the research hypothesis. Table 2 presents the generally accepted assumptions that sustain a direct and positive impact on innovation, our proposed assumptions and the research questions that we identified for our research problem.

Table 2. The research questions

Generally accepted assumptions	Our assumptions	The research questions
The education system is important in the process of human resource formation	The balance between diversity of researches and specialization	
The existence of open and attractive research systems		
Lifelong learning and specialization		
Attracting private sector through public policy		
The macroeconomic stability	Participants' integrity State's leadership	
Youth, social inclusion, social public policies		

To identify actions, there is a need to realize a pertinent analysis and a careful observation of the facts. The research methods require a hypothetical–deductive research done by customizing the existing theories by relaxing or tightening the general accepted assumptions. We try to treat this theme by addressing the case represented by Romania.

Organizing our research approach involves identifying hypotheses, enunciating predictions by making use of deduction and observation, and checking predictions.

Thus, we aimed to verify the following hypothesis capable, and we consider developing the current state of knowledge:

H1: The balance between diversity of researches and specializations can lead to innovation only if the partnership between the public sector and the private sector is sufficiently promoted by the state through public policies. If not, this balance is altered.

H2: The participants' integrity and state's leadership are likely to influence the effectiveness of R&D public policy through state vision regarding innovation processes.

In support of the above mentioned hypothesis, we have considered—taking into account the problems that we have identified as affecting the general accepted knowledge in the field—the following conditions: the balance between diversity of researches and specialization, the participants' integrity involved in realizing the innovative processes, and leadership characteristics of the state.

We used data available from the National Institute of Statistics (INS), the National Council of Scientific Research (CNCS), the National Authority for Scientific Research (ANCS), the Institute of Public Policies (IPP), and from the EU documents. Basing on Table 2, we proposed some indicators to analyze. We present these indicators in Table 3.

Table 3. The proposed indicators

Hypothesis	**Research questions**	**Indicators**
H1	Does Romania have the researches that could be absorbed by the market?	The applicability of researches The balance between theoretical and practical researches The financing policies The main R&D results The cooperation between universities and the private sector The sources of information used by the private sector
	Does Romania have the	Structure of the employees from the R&D

	logistics of carrying out innovative processes?	activities depending on the education level Structure of the R&D employees on scientific domains The rate of tertiary education/ The school's abandonment rate Structure of total expenses/ Total R&D expenses Funds' provenience
H2	Does Romania offer a stable and predictable framework for innovative processes?	The level of transparency The stability of legislation The existence of a strategy for innovation

5. Results

In sustaining H1 we analyzed the indicators related to diversity and specialization of researches.

The applicability of researches Most R&D units—60%—believe that the Romanian research provides solutions to economic competitiveness of Romania (ANCS, 2012, p.67). The applicability in economics of the outcomes from R&D is considered by 65% of R&D units as one relatively low in 2008–2010 (ANCS, 2012, p. 68). We considered that these data are sufficient for demonstrating the research hypothesis.

The balance between theoretical and practical researches Most of the outputs of R&D in enterprises (59%) are purely theoretical, 24% have immediate applicability and 12% require more complex technological transfer process (ANCS, 2012).

The financing policies/the main R&D results In terms of financing achieved through national programs for research, there are several issues, all in relation to the broad innovation policy at EU level (Table 4).

Table 4. The results of research-development-innovation activities for 2008–2010

Aspects	**Characteristics**	**Results**
Financing realized through national programs	It encourages exploitation of research results	65%
	Regarding the assessment, it can be said that it supports, but not enough, those that lead to achieving results with economic application	57%
	Project monitoring is directed to establish project performance and	69%

	progress, but the means used are not the most appropriate	
Documentations	Developed by every research unit	5 per year (approximately)
	Aquired by every research unit	2 per year (approximately)
Patens	Developed by every research unit	3 patens on every 2 units of research
	Aquired by every research unit	1 patent on every 10 units of research
Models and design	Developed by every research unit	1 model per unit
	Aquired by every research unit	4 models on every 10 units

Source: Adaptation after ANCS, 2012. România durabilă (The Durable Romania), [pdf] available at http://www.romaniainoveaza.ro/media/Resurse/Raportarea,%20evaluarea,%20monitorizarea.pdf> [accessed on November, 12, 2013]

Medium-sized companies (50–249 employees) produce most patents and technical-economic documentation, 61% and 55% of the total. In contrast, large firms (over 250 employees) achieved 81% of the models and industrial designs in 2008–2010 and 35% of the others' intangible assets such as copyrights, trademarks, recipes, geographical indications, and the like in the same period (ANCS, 2012).

Small and medium enterprises (SMEs) are the most active in terms of patents, development of the technical-economical documentation, and protecting other intangible assets such as copyrights, trademarks, recipes, geographical indications, and the like in 2008–2010. In contrast, large firms realize models and industrial designs (ANCS, 2012).

For the 2008–2010 period, the most valued were technical-economical documentation (49% of the total being capitalized), followed by models and industrial designs (22% of the total being capitalized) and patents (about 9% the total being capitalized) (ANCS, 2012)

The cooperation between universities and the private sector For Romania, in 2008–2010, there is a weak cooperation between innovative companies and universities, according to the data published by National Institute of Statistics (Table 5). The main cooperation partners of enterprises that innovate were suppliers (6.7%) and customers and consumers, with a share of 5.1%. The rest of the cooperation partners have small shares.

Table 5. The structure of cooperation on enterprises' size and activities 2008–2010

Partner	Enterprises				Activities	
	Total	Small	Medium	Big	Industry	Services
Any	11,2	9,1	12,2	26,2	11,7	10,4
Belonging to the same group	1,2	0,3	2,4	5,6	1,8	0,6
Suppliers	6,7	5,7	6,8	14,8	6,6	6,8
Clients or consumers	5,1	3,6	6,9	12,7	5,9	4,1
Concurrents	3,1	2,4	3,6	8,1	3,6	2,4
Consultants, private institutes of research	2,9	2	3,8	9,1	3,4	2,3
Universities	2,9	2,4	2,8	8,4	3,8	1,9
Governmental institutions of research units	1,7	1,1	1,9	6	1,8	1,6

Source: The National Institute of Statistics (NIS), Press Comunicate no. 171/ 2012, [online] available at http://www.insse.ro/cms/files/statistici/comunicate/com_trim/Inov_ind/inov%20date%20def%202008_2010r.pdf> [accessed on November, 12, 2013]

The sources of information used by the private sector Regarding information sources, NIS shows that the main sources of information used by enterprises in industry and services in 2008–2010 were internal sources, with a share of 20.1%. Large companies have been accounted for using domestic sources of 38.5%. Institutional sources are used in much smaller proportion of only 1.7% and 1.2% universities or government institutions' public research institutes (Table 6).

Table 6. The structure of information sources in 2008–2010 (percentages)

The information source	Enterprise			
	Total	Small	Medium	Big
Internal sources	**20,1**	17,3	22,5	38,5
Market sources	**15,5**	14,1	16,9	
Suppliers				
Clients or consumers	**15,5**	14,3	16,4	24,0
Competitors	**10,7**	10,5	9,7	15,1
Consultants or private research units	**3,5**	3,0	3,2	8,9
Institutional sources	**1,7**	1,5	1,8	
Universities				
Governmental institutions or public units of research	**1,2**	0,7	1,7	3,3
Other	**6,5**	4,6	9,3	
Conferences, fairs, exhibitions				
Professional associations and organizations	**2,3**	1,7	2,7	6,2
Scientific journals and technical publications	**5,1**	3,7	7,0	11,6

Source: The National Institute of Statistics, Press Comunicate no. 171/ 2012, [online] available at

http://www.insse.ro/cms/files/statistici/comunicate/com_trim/Inov_ind/inov%20date%20def%202008_2010r.pdf> [accessed on November, 12, 2013]

Indicators related to logistics Eurostat data show that Romania spent for R&D, in 2010, 0.47% of GDP, while the EU 27 average is 2%. Another target of the Europe 2020 strategy is to achieve a target of at least 40% in the number of people aged between 30 and 34 years who have completed tertiary education. Eurostat data show that, in 2010, the percentage of people aged between 30 and 34 years who have completed a tertiary education is 20.4%, while Bulgaria has a rate of 27.3%, while the average EU 27 is 34.6%. Regarding the school's abandonment rate, Romania has a rate of 17.5%, while Bulgaria has a rate of 12.8% and EU 27 average is 13.5%. Countries with the highest school's abandonment rate are Spain, Italy, Malta, Portugal, and Turkey.

Figure 2 presents the main indicators related to the structure of employees from R&D units and the structure of R&D expenses.

The private sector is the one which invests in R&D, although by having access to governmental funds. Regarding the open and attractive research systems, Romania does not have good values for the specific indicators (number of international scientific publications, number of citations, research results with high applicability), although we have a large number of engineers.

The indicators concerning H2 Concerning the indicators related to H2, ANCS and IPP observed that not only the transparency is missing, but the public institutions have a negative attitude toward transparency. The legislation in Romania is a subject of continual renewal, and Romania does not have a strategy for innovation (Pro Inno Europe).

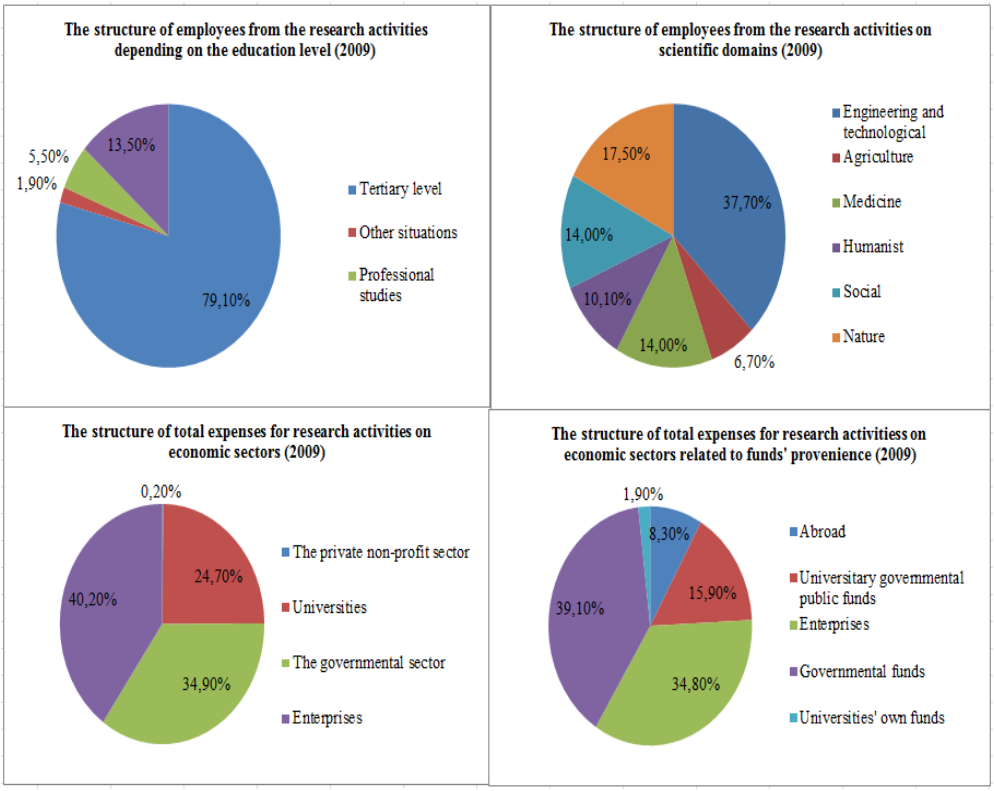

Figure 2. The structure of employees and of the total expenses for the research-development activities (2009)

Source: INSSE, The Statistical Bulletin for 2010, The Science, Technology and Innovation Chapter, [online] Available at < http://www.insse.ro/cms/files/Anuar%20statistic/13/13%20Stiinta,%20tehnologie%20si%20inovare_ro.pdf> [accessed on November, 12, 2013]

The innovation policies are approached by the R&D National Plan (2007-2013) and by sectorial programs like: Raising the Economic Competitiveness or Regional Development. The public policies for social innovations, public sector's innovation, and services' innovation are weekly represented.

6. Discussions

Of the issues raised, we mention the lack of policies to promote partnerships between universities and private sectors and the lack of researchers' specialization. Without the existence of collaboration between the academic and private sectors, the transfer of knowledge cannot be achieved, the regional market has no interest in using innovation to produce academic background, and losses are for both the sides.

At present, Romania is facing high rates of school's abandonment rate, because of the lack of appropriate policies for social inclusion. Romania has now a large number of people forced to work abroad whose children are Romanian education system's pupils. Without family and without its help, personal development suffers, human resource suffers, implicitly, from the lack of a good education, and therefore, we export cultural diversity and we do not produce sufficiently specialized human resource.

Regarding researches' diversity at the level of universities and research institutes, we find that this level is high to very high and idealistic, if we consider the reduced material with which researchers or research teams aim to resolve fundamental issues or applied research.

Results of research are measured through indicators such as number of specialized articles published in national or international level and the number of citations. Many are of fundamental research, which is precisely the type of research difficult to demonstrate the practical test. Without promoting various types of partnership, this research is not valued enough.

We can say that the lack of state's vision in terms of academic research exploitation has direct consequences on a very high diversity of research topics, with little application that involves a direct impact on innovation.

Lack of legal framework and a state incapable to propose a strategy to support the education of a generation and a research strategy adapted to competitive advantages affects the number of patents registered in academia. Most patents are owned by individuals. We often hear about these people in times of commercial break from a political show and then no longer know anything about them.

Romania is witnessing in recent years a diversity of specializations combined with the risk of losing substance. The education's offer, the specialized programs, training and many other human resource development programs are available in a considerable amount, but it comes in very many cases, with the human resource to be useful only at the entry into the system.

The lack of a systemic view makes all this flow of knowledge that may exist between educational or training programs and human resources to lose consistency and hence value.

European fund management by projects is, in Romania, a subject of great public importance, very poorly managed, and affected by all the shortcomings of public administration and public sector inertia.

The main problem is the extremely low level of transparency regarding the selection of the winning projects and activities. Romania still not accepts the idea that the European funds are public money to be spent totally transparent. On the other hand, Romania's institutions do not properly manage project information.

There is no corresponding clearly defined added value that these investments will bring in terms of real economic growth.

Another big problem is setting vague goals and targets. We cannot deny the diversity of research. It is true that all of Europe is not very good in terms of using research results, but, at least in the case of Romania, we could identify key issues that determine the general hypothesis refinement. Research is conducted by human resource, and this resource is formed by education and training, is refined by advancing specialized studies and, in Romania, is lost through brain-drain or lack of interest on capitalization.

7. Conclusions

Romania cannot compete with big industries, but Romania can get benefits from ecological agriculture, from tangible and intangible creative products, and from renewable energy. Also, in terms of research carried out in universities and research institutes, the state should not afford "wasting" time and money.

Although it is widely recognized that Romania is in a transitional stage of development permanently to a higher level, defined by indicators and targets that sounds almost metaphorically, Romanian has enough resources and potential. It remains to be seen what will be the measures and policies adopted and, more importantly, when Romania will realize that political action must be an act of ethical responsibility and especially a civic one.

In terms of applicability, we believe that we came up with proposals for treatment of the subject from the standpoint of public policy evaluation and tried to emphasize that the Romanian state, through its governmental bodies, should establish public policies that proposes a number of indicators more realistic to the Romanian economy. Defining ambiguous goals and an apparently idealistic vision are not likely to influence in a significant way the results of research. For innovation to occur, the state must reduce the diversity of researches, focus on

specialization and promote public policies capable to connect universities with public sector.

Political will and civic act seem to represent the disruptive innovations that Romanian state should perform to be able to propose and implement a strategy for innovation.

The image that we have today regarding Romania's past (1850-1945) reveals that our progress seems to be determined by two factors: a political class that has proved verticality and strategic wisdom—though not always—and an education offered by cultural factors whose authority was not overshadowed by the non-values of today's society.

Solutions in this sense are, first, education—in all its forms of expression: informal, formal, and non-formal—and, second, society, particularized, above all, through state institutions that generate a certain social and economic strategy, of which the private sector is always dependent and, through which, gradually, a large part of society have access to a higher level of needs defined by Maslow. Only in this way can the creativity of individuals be represented, treasured, and valued; creativity that will be reflected in innovation and will thus result in progress.

There is a need to achieve some steps from the prehistory phase of innovation: (1) educating society in a spirit of respect and valuing this concept, (2) removing intellectual fraud, (3) imitation by buying patents from developed economies, (4) their assimilation, (5) adaptation to the specific needs of Romanian society, (6) avoiding formalization of the creative processes. Only later will Romania be able to make substantial investments in its own forms of R&D.

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