VALUE ADDED, PRODUCTIVITY AND PERFORMANCE OF FEW SELECTED COMPANIES IN SRI LANKA

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ABSTRACT

Productivity is a measure of the rate at which inputs are transformed in to output. Hence productivity provides the technical relationship that exists between inputs and outputs.

Productivity is actually looking at the more general issue of performance. Performance covers both overall economic and operational aspects. It can be described as the success of a company and its activities. So that value added, productivity and performance are closely inter connected. This paper attempt to measure the productivity of the 15 financial companies listed under the CSE using value added ratios such as (i) sales per employee ratio, (ii) labour cost to value added ratio, (iii) profit before tax to employee ratio, (iv) labour cost to sales ratio, and (vi) value added to employee ratio and to measure the performance with the ratios of (i) gross profit ratio,(ii) value added per rupee of fixed asset, (iii) return on capital employed, and (iv) net profit ratio using data representing the period of 2005-2009. The study finds that profit before tax per employee and value added per rupee of fixed asset (VAFA) is positively correlated and labour cost to sales (LS) and gross profit (GP) is also positively correlated. Further the labour cost to value added (LVA) is correlated with gross profit (GP) and value added per rupee of fixed asset and no relationship between the rest of the productivity and performance measures. R^2 value of 0.471, 0.315, 0.198 and 0.887 (In all for models) which are in the models denote that 47.1%, 31.5%, 19.8%, and 88.7% of the observed variability in GP, NP, ROCE, and VAFA respectively in all the independent variables such as SE,VE,PE,LS, and LVA. Remaining 52.9%, 68.5%, 80.2% and 11.3% of the variance in GP, NP, ROCE, and VAFA related to other variables which are not explained, because they are not depicted in the models.

***Keywords**: Performance, productivity, value added.*

Introduction:

Survival of the organizations depends on their performance, particularly the financial performance, while the performance is depending upon the productivity which is measured in terms of output. Output is most commonly measured in terms of value. But in some cases physical units are also used. Production in terms of value can be measured either as real value of turnover or the real value added. Anyhow turnover doesn't provide precise measure of productivity as it incorporates a fair amount of double counting due to value added by bought inputs (Muhammad mahmood, 2003). Hence the productivity is measured by using value added. Value added can be defined as sales less the cost of raw materials and services outside the firm (Muellbauer, 1991). Value added can be computed by subtracting the costs of purchased materials, services and utilities from the firm's total revenue. On the other hand it can be calculated as the sum of all employee compensation, depreciation, taxes, and retained earnings, etc (Lieberman & Jina kang, ….). Productivity is the relationship between value added and input of production factors (Aspen, Brathen, Cassel, Ericsson & Marelius, 1991). Productivity is generally measured through efficiency and effectiveness which is equal to the relationship between value adding time and total time (Jackson & Petersson, 1999).It is apparent that the productivity measures are linked with value added. Hence the productivity measures using value added are also used in the study.

Efficiency and effectiveness are demystified performance through productivity. Effectiveness is usually described through as "doing the right things" while efficiency means" doing things right" (Sink &Tuttle, 1989).Efficiency is strongly connected to the utilization of resources and mainly affects the denominator (inputs) of

the productivity ratio .it is very similar to the concept that is referred as utilization rate which means how much equipment or a process is used in practice compared to its maximum. On the other hand effectiveness is often linked to the creation of value for the customer and mainly influences the numerator (output) of the productivity ratio. It is the ability to reach a desired objective or the degree to which desired result are achieved. Productivity is actually looking at the more general issue of performance. Performance covers both overall economic and operational aspects. It can be described as the success of a company and its activities. So that value added, productivity and performance are closely inter connected.

Significance and Literature Review:

Productivity is a measure of the rate at which inputs are transformed in to output. Hence productivity provides the technical relationship that exists between inputs and outputs (Diewert, 1992). Productivity represents the efficiency with which physical inputs are converted to useful outputs. It measures the relationship between output such as goods and services produced and inputs that include labour, capital, material and other resources (Hill, 1993),and it is the central long-run factor determining any population's average of living (Thurow, 1993). The level of productivity with in an organization depends on labour, capital, and the state of technology. Productivity growth over time will reflect the growth in these factors over time. The most common measure of productivity usually used is labour productivity or output per person employed or per hour worked. Even though hours worked may be difficult to measure it is better measure because this takes into account both changes in person employed and over time worked, standard weekly hours, leave taken and the proportion of part-time workers. Labour productivity performance is actually influenced by other factors such as capital equipment, new technology, and improved management skills. Changing patterns of factor use and changes in the quality of the workforce also influence labour productivity. These changes have significant an effect on outputs (Barrel, 2000).Productivity is also an indicator of technical efficiency because it shows the relationship between outputs and labour inputs given the technology with in the firm. Labour productivity is generally analyzed in the context of multifactor productivity. Therefore labour productivity can be regarded as a measure of overall productivity performance. In a way value added per employee is used in this paper as one of the productivity measurement. Indeed value added shows the ability of an organization in creating wealth and this wealth is shared among stakeholders. So the value added is the base for the productivity measures which leads to the performance of the organization. In addition, capital productivity as value added per unit of capital stock and multi factor productivity as a weighted average of labour and capital productivity can also be used.

The definition of organizational performance with respect to a firm differs depending on the firms overall goals. The chosen definition also impacts how performance is measured. It is important to understand the multidimensional nature of performance construct while measuring the performance of a firm (Lumpkin & Dess, 1996). There are predefined methods for measuring the performance of a firm. Measuring all of sales growth, market share, profitability, overall performance and stock holder satisfaction will provide a more accurate view of such firms' performance. Covin and slevin (1989) use financial measures such as sales level, sales growth rate, cash flow, return on share holder's equity, gross profit margin, and net profit from operations, profit to sales ratio, return on investment and ability to fund business growth to represent performance for both the growth and financial perspectives. It is possible to regard financial performance and growth as different aspects of performance. However performance is broader term that covers both overall economic and operational aspects. It includes almost any objective of competition and manufacturing excellence whether it is related to cost, flexibility, speed, dependability or quality. Moreover performance can be described as an umbrella term for all concepts that consider the success of a company and its activities (Thomas & Baron, 1994). In this junction, triple-P Model (productivity, Profitability and performance) can be described, the concept of productivity is purely a physical phenomenon. Profitability is also seen as a relationship between output and input, but it is a monetary relationship in which the influences of price factors are included. Performance is the umbrella term of excellence and includes profitability and productivity as well as other non-cost factors such as quality, speed delivery and flexibility (Grunberg, 2004). In this manner, this paper aims to identify the relationship between productivity and performance of a few selected finance listed companies under the Colombo Stock Exchange-CSE of Sri Lanka.

Various productive measures can be computed depending on the treatment of inputs and outputs. Single-factor productive ratios, such as labour productivity or capital productivity, give out put per unit of a single input type. Multi-factor or total- factor productivity ratios take in to amount the fact that multiple inputs are jointly used (Coelli, Rao & Battese, 1998.,Liberman, Lau & Williams, 1990., Mammone, 1980).Corporate report states some productive measures such as sales per employee, value added per employee, profit before tax per employee, labour cost to sales and labour cost to value added ,where as engineering federation of employers identified some performance ratios, namely (i) Standard hour to actual hour, (ii) Value added per rupee of fixed asset, (iii) Value added per rupee of material cost of production, (iv) Value added per direct labour hour.

Numerous international comparative studies of productivity have been performed at the industry level (Baily & Gersbach, 1995., Jorgenson, 1995, VanArkand Pilat ,1993) and statistical analysis has often been applied at this level to better understanding of the nature of economic growth in emerging economics

(Chen,1997,Felipe,1999, Norworthy & Malmquist,1983, Sato,2005, Truett & Truett, 1997, & Yuhn and kuron , 2000). Similarly financial performance of organizations has been measured using a combination of financial ratio analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Avkiran, 1995). Chien & Danw (2004) revealed that most previous studies concerning company performance evaluation focus mearly on operational efficiency and operational effectiveness, which directly influence the survival of a company. All financial performance measures such as interest margin, return on assets and capital adequacy are positively correlated with customer services quality (Elizabeth & Ellot, 2004). These existing literatures say that various studies have been done on productive and performance. Although most studies focused on productivity, very fewer studies used the value added for the productivity measures. Particularly in SriLanka, no studies have been done on this specified disciplines .Therefore the present study is initiated on "value added, productivity and performance of few selected finance companies".

The financial organizations like banks, insurance and other financial institutions are contributing towards the economic development and hence such organizations are treated as a vital service industry in the world. At present it is obvious that number of branch of these kinds of organizations is instituted in Northern Province of SriLanka, particularly in Jaffna. At the same time, number of small and medium enterprises such as hotels and restaurants, retail trading and cottage industries are also established here. Banks and some non-governmental organizations (NGOs) have been funding to these ventures which are contributing to the country through regional development. So that these organizations are very keen and have a systematic approach to grant loan and recovery by implementing new schemes, example "Vadakkin Vasantham". Sustainability of these organizations would strengthen them for their long term services to entrepreneurs. That is why. The present study has chosen financial organizations under CSE.

Objective of The Study:

The following objectives are taken for the study.

1. To examine the relationship between productivity and performance of finance
2. Companies in Sri Lanka.
3. To identify the impact of productivity on performance.
4. To asses the productivity of selected companies
5. To suggest the organization to urge productivity and performance.

Data collection:

The secondary data were used to the study. The data required for the study means gathered from the annual report of the respective company through the website and journals books, etc

Sampling:

Finance companies listed under Colombo stock exchange (CSE) are the sampling organizations. The researcher identified totally fifteen (15) finance companies such as (1)Citizen Developments Bank, (2) Sampath Bank, (3) Central Finance, (4) Nation Trust Bank, (5) Seylan Bank, (6) Asian Alliance, (7) DFCC, (8) LB Finance, (9) Hatton National Bank, (10) Batli Finance, (11) National Development Bank, (12) Peoples Leasing, (13) Commercial Bank of Ceylon, (14) HSBC and (15) Abans finance. Out of fifteen Companies only twelve (12) Companies were selected for the present study except Commercial bank, HSBC and Abance finance, because it was difficult to extract some relevant information particularly value added statement from these companies, HSBC published world wide report not only for the SriLanka country; similarly it was able to gather the information of the group of Abans finance PLC. Hence these three Companies are neglected for this study. Data for the last five years: 2005-2008 were considered for the study

Hypotheses:

The following hypotheses were formulated for the survey

1. Productivity and performance are positively correlated.
2. Productivity has impact on performance.

Methodology:

Five years data representing the period of 2005- 2009 were used to measure the productivity and performance of selected finance Companies in SriLanka. The value added as a wealth created by the Companies used to calculate productivity measures. In a way the following measures were used to measure the productivity.

(i) Sales per employee ratio-SE = $\frac{\text{Sales/Turnover}}{\text{No of employees}}$

(ii) Value added to employee ratio-VE =

$$\frac{\text{Value added}}{\text{No of employees}}$$

(iii) Profit before tax to employee ratio-PE =

$$\frac{\text{Profit before tax}}{\text{No of employees}}$$

(iv) Labour cost to sales ratio-LS =

$$\frac{\text{Labour costs X 100}}{\text{Sales}}$$

(v) Labour cost to value added ratio-LVA =

$$\frac{\text{Labour costs X 100}}{\text{Value added}}$$

Further, the following measures were applied to measure the financial performance on the basis of sales, investment, and value added.

(i) Gross profit ratio- GP = $\frac{\text{Gross profit X 100}}{\text{Sales}}$

(ii) Net profit ratio-NP = $\frac{\text{Net profit X 100}}{\text{Sales}}$

(iii) Return on capital employed-ROCE=

$$\frac{\text{Profit before interest and tax X100}}{\text{Capital employed}}$$

(iv) Value added per rupee of fixed asset-VAFA =

$$\frac{\text{Value added}}{\text{Fixed asset}}$$

From the above variables a conceptual model was formulated to reveal the relationship between variables.

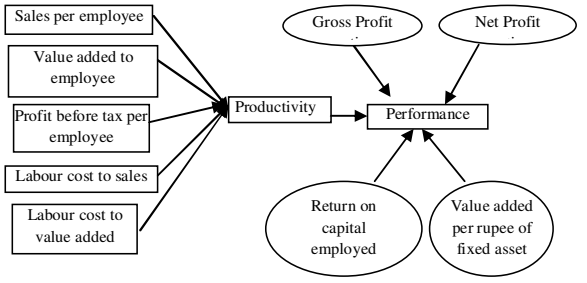

Figure 1: Conceptual model

The model shows the relationship between the productivity and financial performance. Productivity is the independent variables where as performance is the dependent variable. Multiple correlation analysis was performed to find out this relationship. Further multiple regressions were also used to test the hypotheses using SPSS package.

Multiple correlation analysis was performed to identify the relationship between productivity measures and performance measures of Companies selected for the study. Multiple regression models were applied to estimate the influence of independent variables. The present study considered measures such as sales per employee, value added per employee, profit before tax per employee, labour cost to sales, and labour cost to value added as independent variables, where as gross profit ratio, net profit ratio, return on capital employed, and value added per rupee of fixed asset as dependent variables. With these variables, the following equations were formulated.

$$GP = \hat{a} + \hat{a}_1 X_1 + \hat{a}_2 X_2 + \hat{a}_3 X_3 + \hat{a}_4 X_4 + \hat{a}_5 X_5 + \mu - - - - - - - - \quad (1)$$

$$NP = \hat{a} + \hat{a}_1 X_1 + \hat{a}_2 X_2 + \hat{a}_3 X_3 + \hat{a}_4 X_4 + \hat{a}_5 X_5 + \mu - - - - - - - - \quad (2)$$

$$RoCE = \hat{a} + \hat{a}_1 X_1 + \hat{a}_2 X_2 + \hat{a}_3 X_3 + \hat{a}_4 X_4 + \hat{a}_5 X_5 + \mu - - - - (3)$$

$$VAFA = \hat{a} + \hat{a}_1 X_1 + \hat{a}_2 X_2 + \hat{a}_3 X_3 + \hat{a}_4 X_4 + \hat{a}_5 X_5 + \mu - - - (4)$$

Where,
GP- Gross profit
NP- Net profit
ROCE- Returned on capital employed
VAFA- Value added per rupee of fixed asset
X_1 - Sales per employee
X_2 - Value added per employee
X_3 - Profit before tax per employee
X_4 - Labour cost to sales
X_5 - Labour cost to value added
μ - Error term ($\hat{a}$, the constant and$\hat{a}$, the co-efficient)

Results and Discussion:

Co-efficient of correlation was computed to find out the significant relationship between the variables and presented in Table 01.

Table 01 indicates that the r-value between profit before tax per employee and VAFA is 0.735 which is significant at 0.01 levels. It means that when profit per employee increases value added per rupee of fixed asset increases. There is a relationship between labour cost to sales and gross profit. Further the correlation values between labour cost to value added and gross profit, and value added per rupee of fixed asset are 0.464 (significant at 0.05 levels) and 0.896 (significant at 0.01 levels).So that labour cost to value added is positively correlated with gross profit and value added per rupee of fixed asset. There is no correlation between rest of the productivity and performance measures. Hence the hypothesis 01 is accepted in respect of the productivity ratios such as profit per employee, labour cost to sales and labour cost to value added.

Multi-Collinearity:

Two major methods were utilized in order to determine the presence of multi collinearity among independent variables in this study. These methodologies involved calculation of both a Tolerance test and Variance Inflation Factor –VIF (Kleinbaum et.al, 1988).The results of this analysis are presented in Table 02.

As can be seen from this data, none of the Tolerance level is < or equal to .01; and all VIF values are well below 10. Thus the measures selected for assessing independent variables in this study do not reach level indicate of multicolinearity. The acceptable Durbin – Watson range is between 1.5 and 2.5. In this analysis Durbin – Watson values for GP and NP were at the maximum limit, and Durbin-Watson values for ROCE and VAFA were 2.36 and 1.96 respectively which are between the acceptable ranges, show that there were no auto correlation problems in the data used in the research. Thus, the measures selected for assessing independent variables in this study do not reach level indicate of multicolinearity.

Table 01: Correlation matrix for finance Companies

	GP	NP	ROCE	VAFA	SE	VE	PE	LS	LVA
GP	1								
NP	.465** (.000)	1							
ROCE	.218 (.097)	.491** (.000)	1						
VAFA	.303 (.150)	.242 (.255)	.019 (.931)	1					
SE	.167 (.508)	.197 (.434)	.055 (.829)	.104 (.844)	1				
VE	.468 (.050)	.066 (.793)	.020 (.936)	.327 (.527)	.017 (.938)	1			
PE	.022 (.932)	.207 (.410)	.443 (.065)	.735** (.006)	.304 (.149)	.151 (.481)	1		
LS	.596** (.002)	.262 (.294)	.392 (.108)	.185 (.726)	.003 (.993)	.063 (.748)	.185 (.387)	1	
LVA	.464* (.022)	.174 (.417)	.082 (.704)	.896** (.000)	.041 (.938)	.376 (.462)	.011 (.984)	.221 (.673)	1

* Significant at 0.05 levels ** Significant at 0.01 levels

Table 02: Test of Co-linearity

Variable	Tolerance	VIP
Sales per employee	.610	1.641
Value added per employee	.942	1.062
Profit per employee	.289	3.456
Labour cost to sales	.783	1.277
Labour cost to value added	.305	3.276

Table 3: Predictors of performance- Model summary

Model	Dependent variable	R	R^2	Adjusted R square	Std.error of The Estimate
1	GP	0.686[a]	0.471	0.029	18.314
2	NP	0.561[a]	0.315	0.256	12.345
3	ROCE	0.445[a]	0.198	0.470	21.0163
4	VAFA	0.942[a]	0.887	0.794	29.4346

Predicators : (constant), LS , VE, SE, PE, LVA

Regression model was applied to test how far the productivity had impact on performance. Coefficient of determination-R^2 is the measure of proportion of the variance of dependent variable about its mean that is explained by the independent or predictor variables (Hair et.al, 1998). Higher value of R^2 represents greater explanatory power of the regression equation. In this way, a multiple regression analysis was performed to identify the predictors of productivity as conceptualized in the model. Table 3 provides the summary measures of the model.

The specification of five variables ie sales per employee, value added per employee, profit per employee, labour cost to sales and labour cost to value added in the model revealed the ability to predict performance. R^2 value of 0.471, 0.315, 0.198 and 0.887 (In all for models) which are in the models denote that 47.1%, 31.5%, 19.8%, and 88.7% of the observed variability in GP, NP, ROCE, and VAFA respectively in all the independent variables such as SE,VE,PE,LS, and LVA. Remaining 52.9%, 68.5%, 80.2% and 11.3% of the variance in GP, NP, ROCE, and VAFA related to other variables which are not explained, because they are not depicted in the models. Theses R^2 values indicate that there may be number of variables which can have impact on the above performance measures that need to be studied. Hence this area indicated as a scope for future research.

Table 4: Coefficient For Predicators of Performance

Models		Unstandardized Coefficients		Standardized Coefficients	t-value	Sig
		B	Std.Error	Beta		
1-GP	Constant	111.170	182.432		.609	.565
	SE	.208	.605	.205	.539	.609
	VE	.194	.436	.136	.445	.672
	PE	.167	.456	.202	.365	.728
	LS	.928	1.050	.297	.884	.411
	LVA	.208	.125	.896	1.666	.147
2-NP	Constant	43.718	122.977		.356	.734
	SE	.202	.408	.214	.495	.638
	VE	.392	.294	.465	1.336	.230
	PE	.007	.308	.014	.023	.982
	LS	.221	.708	.119	.312	.766
	LVA	.018	.084	.128	.209	.841
3-ROCE	Constant	158.873	209.354		.759	.477
	SE	.798	.694	.539	1.150	.294
	VE	.057	.500	.043	.114	.913
	PE	.372	.524	.483	.710	.504
	LS	.490	1.205	.168	.406	.699
	LVA	.058	.143	.270	.408	.698
4-VAFA	Constant	185.634	293.214		.633	.550
	SE	.773	.972	.140	.795	.457
	VE	.699	.700	.141	.998	.357
	PE	.348	.734	.121	.475	.652
	LS	2.113	1.688	.194	1.251	.257
	LVA	.564	.201	.698	2.815	**.031**

At the above models, t values are insignificant for all the independent variables in the model 1, 2 and 3. But t value for labour cost to value added is significant in the model 4. Labour cost to value added has a positive coefficient, which means that value added per rupee of fixed asset increases with increasing level of labour cost of value added.

Conclusion:

Correlation value shows that profit before tax per employee and value added per rupee of fixed asset (VAFA) is positively correlated and labour cost to sales (LS) and gross profit (GP) is also positively correlated. Further the labour cost to value added (LVA) is correlated with gross profit (GP) and value added per rupee of fixed asset and no relationship between the rest of the productivity and performance measures. R^2 value of 0.471, 0.315, 0.198 and 0.887 (In all for models) which are in the models denote that 47.1%, 31.5%, 19.8%, and 88.7% of the observed variability in GP, NP, ROCE, and VAFA respectively in all the independent variables such as SE,VE,PE,LS, and LVA. Remaining 52.9%, 68.5%, 80.2% and 11.3% of the variance in GP, NP, ROCE, and VAFA related to other variables which are not explained, because they are not depicted in the models.

According to the Table 04, t values are insignificant for all the independent variables in the model 1, 2 and 3. But t value for labour cost to value added is significant in the model 4. Labour cost to value added has a positive coefficient, which means that value added per rupee of fixed asset increases with increasing level of labour cost of value added. Indeed fixed assets are the resources of the organization which have the capacity to generate the profit. So this is the good signal for the banking organizations. Value added is the wealth created by the organization and hence the cost of materials and services from outside the organization should be minimized in order to improve the value added.

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