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A Study on Factors Affecting the Income of an Establishment in the Western Province

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ABSTRACT

Annual Survey of Industries (ASI) is one of the most important surveys conducted by the Department of Census and Statistics. It is monitored and operated under the Industries, Trade Construction and Services Division. The objective of this survey is to collect information about the industries in Sri Lanka. The results of the survey are used to manipulate indicators of the income of the country and to make the GDP value of the country.

This research is on identifying the factors affecting the income of an establishment. It is based on the Annual Survey of Industries 2013. Nearly 1500 data points were collected as secondary data from the western province. The income of an establishment is considered as the dependent variable and the total number of employees, opening fixed capital assets, added fixed capital assets, depreciated fixed capital assets, raw materials, input, fixed assets, operational employees, work partners and family workers are considered as the independent variables. These variables are selected and calculated by using theoretical equations based on the economic principles.

Since some of the establishments do not agree to give their income value as it is considered as confidential it is important to predict the income. A multiple regression model was developed to predict the income of an establishment. And it was found that the total number of operational employees, input value and the salary of the employees affected the income of an establishment. The residuals followed the normality and randomness. Therefore, the identified model can be used to predict the income of an establishment.

KEYWORDS: Department of Census and Statistics (DCS), Annual Survey of Industries (ASI), Factors, Income

1 INTRODUCTION

The Department of Census and Statistics is the central government agency mainly responsible for the collection, process, analysis and dissemination of statistical information and for manipulating the statistical indicators related to the socio economic condition of the country.

Industries, Trade, Construction and Services Division is the division related to this study since the Annual Survey of Industries is conducted by this division. It is one of the most important divisions in the DCS which has a greater responsibility of the economic indicators of the country. The Economic Census and the Annual Survey of Industries carried out by the Industries, Trade, Construction and Services Division plays a major role in manipulating indicators for the national accounts and the GDP value of the country.

Annual Survey of Industries is conducted to collect information about a selected sample of establishments in the country. DCS Started to conduct Annual Survey of Manufacturing Industries (ASMI) in 1979 and After the Census of Industry in 1983, ASMI was replaced by Annual Survey of Industries (ASI). Since 1984, ASI has been conducted by DCS Annually and the 28th ASI series was conducted in 2013.

The main objective of this survey is to provide indicators of the performance and the structure of the industrial sector. And another objective is to update the list of industrial establishments already available. The questionnaires and instructions with a covering letter are posted to large

establishments. But the Field officers of the DCS visit the non- responding establishments, small and medium scale establishments to collect data and get higher percentage of responses.

The main objective of the research is to identify the factors affecting on the income of an establishment in western province and to develop a model to predict the income value of an establishment.

2 LITERATURE REVIEW

The key success factors required for companies in the apparel manufacturing was identified by Callychurn, Soobhug and Hurreeram (2014) using one of the top five apparel manufacturing companies in Mauritius.

Qureshi, Ayyub, Ramzan, Zaman and Yasir (2012) have revealed that female owned businesses in Punjab-Pakistan were less successful than male owned businesses using a hypothesis testing method.

According to the study of Sarel (1997), higher growth rate, higher income level, higher investment rate, real depreciation and improvements in terms of trade were found to have a significant negative effect on changes in income inequality. Macroeconomic factors that were found to have no significant negative effect on changes in income inequality were inflation public consumption, level of the real exchange rate, external position and price ratio of investments.

Moorthy, Tan, Choo, Wei, Ping, and Leong (2012) have identified that the use of marketing information can influence the performance of Small and Medium Establishments at the highest by using multiple linear regression analysis method.

The variables, return on equity, book value per share, dividend per share, dividend yield, price earnings, and firm size are identified as the significant determinants of share prices in the Bahrain market in the study of Sharif, Purohit and Pillai (2014). An ordinary least square regression analysis was used to get this conclusion.

3 METHODOLOGY

The data which were collected for the ASI 2014 were used for this analysis. There were 1458 data points in the data set with 15 variables.

A multiple Regression model was developed to find out the association of the other variables with the income and SPSS software package was used for the analysis. The backward elimination method was used for the regression since it remains the variables which have the highest contribution to the model.

4 DATA COLLECTION AND ANALYSIS

The data set for the analysis was collected through secondary data collected from the ASI 2013. Only the western province data were collected for the study since most of the establishments were located in western province. There were 1458 data points.

The data analysis consisted of two stages preliminary analysis and the advance analysis. Income was considered as the dependent variable of the model and the independent variables were, Total number of employees, Opening Fixed Capital Assets, Added Fixed Capital Assets, Depreciated Fixed Capital Assets, Raw Materials, Total value of other materials used except the raw materials, Salary of Employees, Fixed Assets, Number of Operational Employees, Number of Work Partners and Number of Family Workers.

5 RESULTS AND DISCUSSION

Preliminary analysis shows that there are 28 industries in the Western province. Manufacturing of food products and beverages, Manufacturing of Wearing Apparel, Dressing and Dyeing of fur and publishing, printing and reproduction of recorded media are the most common industries in Colombo district. Manufacturing of Coke, refined Petroleum products industry and nuclear fuel industry have the highest mean income; the highest mean raw material and the highest mean

input have comparatively all other industries. Electricity, Gas, Steam and Hot Water Supply industry have comparatively a large number of employees and a high variation in the salaries of the employees.

The summary of the regression analysis is presented in Table1.

Table 1: Summary of the Regression Model

Model	Sum of Square	Mean Square	F	Sig.
Regression	3.003	5.005	1768.643	0.000
Residual	4.106	2.830		
Total	3.414	1457		

As described in Table 1, there is evidence to indicate that the fitted model is significant. R square value of the model is 0.880 and this value implies that the model explains 88% variance of the income.

The summary of the coefficients of the fitted variables is presented in Table 2.

Table 2: Coefficients

Variable	Standard Coefficient	Sig.	Tolerance	VIF
Constant	1.223	0.010		
Input	0.649	0.000	0.855	1.170
EmpSal	0.026	0.040	0.459	2.178
OperEmp	0.025	0.045	0.385	2.600

According to Table 2, the constant, Input, EmpSal and OperEmp are significant at 5% level of significance. The tolerance values of these variables are greater than 0.2 and the VIF values are less than 5. Therefore it can be concluded that the multicolliniarity does not exist.

Table 3 shows that the tests of normality.

Table 3: Normality Test of Residuals

Normality Test	Kolmogorov-Smirnov[a]	Shapiro-Wilk
Significance value	0.061	0.057

As illustrated in Table 3, the residuals are normally distributed at 5% level of significance.

The scatterplot of residuals and predicted values are presented in Figure1.

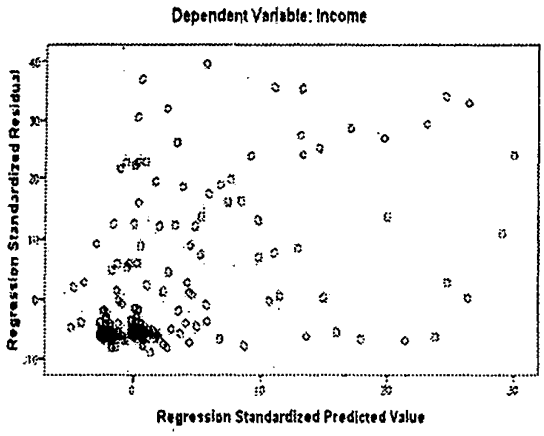

Figure 1: Scatterplot of Residuals

Fig.1 indicates that the residuals are randomly scattered. Therefore they are independent.

Therefore it can be concluded that the fitted model is accurate.

The multiple regression model developed by the analysis is given in Equation (1).

Income = 1.223 + 0.649 Input + 0.026 EmpSal + 0.025 OperEmp (1)

The results gained through the analysis give a good solution to a major problem occurred in the process of ASI. The regression model developed in the research can be used to complete the information of the establishments which do not agree to reveal their output or the income values.

By forecasting the values using this model the process of ASI can be completed successfully and it will help in manipulating important economic indicators for the country. Since these indicators are used to calculate the GDP value, it is clear that the accuracy of the GDP value can be increased.

6 CONCLUSION

Three variables which make an impact on the income of an establishment are identified and they are Total number of operational employees, Input value and the Salary of the employees.

REFERENCES

- Callychurn, D.S., Soobhug, K., & Hurreeram D.K., (2014). Key Success Factors for the Apparel Manufacturing Industry: A Case Study at Company X. *Proceedings of the World Congress.* London, *U.K., II:* Engineering.
- Kaasa. A., (2003). Factors Influencing Income Inequality in Transition Economies, *Tartu University Press, University of Tartu Faculty of Economics and Business Administration, (207).*
- Moorthy. M.K., Tan. A., Choo. C., Wei. C.S., Ping. J.T.Y., & Leong. T.K., (2012). A Study on Factors Affecting the Performance of SMEs in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, Department of Commerce and Accountancy, UniversitiTunku Abdul Rahman, Perak Campus, Kampar, Malaysia, 2, (4).
- Qureshi M.H., Ayyub S., Prof. Dr. Ramzan, M., Zaman Q., Yasir, M. (2012). Factors Affecting Small-Business Performance in Punjab-Pakistan: A Gender Based Analysis. *Interdisciplinary Journal of Contemporary Research in Business,* Institute of Interdisciplinary Business Research, *4, (2).*
- Sarel. M., (1997). How Macroeconomic Factors Affect Income Distribution, *I MF Working Paper, International Monetary Fund.*
- Sharif. T., Purohit. H., & Pillai. R., (2015). Analysis of Factors Affecting Share Prices: The Case of Bahrain Stock Exchange, *International Journal of Economics and Finance, Taimur Sharif, Department of Business Administration, ALHOSN University, Abu Dhabi,* 7, (3).