10th International Research/Expert Conference
"Trends in the Development of Machinery and Associated Technology"
TMT 2006, Barcelona – Lloret de Mar, Spain, 11-15 September, 2006

ANALYSIS OF INFLUENCE OF TYPE OF ORGANIZATION, OWNERSHIP AND NUMBER OF EMPLOYEES ON BUSINESS RESULT

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ABSTRACT:
In this paper results of the research of influence of type organization, ownership and number of employees on business result are presented. The analysis is done using regression method. In developed mathematical model business result is defined as dependent variable, while type of organization, ownership and number of employees are defined as independent variable. Type of organization and ownership are introduced as categorical variables, while number of employees is observed as continuous variable. Relationship between each independent and dependent variable is analyzed separately, while the model explains influence of all three independent variables on business result as dependent variable. Standardized coefficients are calculated as well and are used to determine the most important independent variable in the model. The research sample consists of organizations from Bosnia and Herzegovina from wood processing industry that was observed as the reference industrial branch for this research.
Keywords: Business Result, Organization, Ownership, Number of Employees, Regression

1. INTRODUCTION

This research is based on the posture that relationships do exist between business result, as a dependent variable on one hand, and number of employees, type of organization and type of ownership, as independent variables on the other hand. As such, development of multiple linear regression statistical models are used as a tool to verify or otherwise refute the presence of relationships between interacting variables. Therefore, the technical approach adopted here consisted of two major steps. First, multiple linear regression model was developed that represents anticipated relationships between business result and related independent variables. This model was then tested for validity using statistical tools such ANOVA analysis, and coefficient of determination, R^2. Second,

linear regression models were constructed that represent anticipated relationships between business result and related independent variables. As in the first case, these models were then tested for validity using the same statistical tools.

Study [1] on some aspects of firm dynamics finds that firm growth, the variability of firm growth, and the probability that a firm will fail decrease with firm age. It also finds that firm growth decreases at a diminishing rate with firm size even after controlling for the exit of slow-growing firms from the sample. There is considerable evidence [2] suggesting that the average profitability of small enterprises exceeds that of large firms. However, productivity tends to be positively related to firm size. Organizational characteristics, especially number of employees and amount of capital invested, and organizational strategies, especially businesses aiming at a national market, are the most important determinants of business survival [3]. Research [4] shows that business age, beginning size, ownership form, industrial sector, and legal form are the most important factors related to growth. Although business growth differs among industrial sectors, youth, ownership independence, and small size are major factors that underlie growth across all industries. Creation [5] of a new business-model is considered to be one of the important factors of market growth. The creation of a new business-model means an appearance of new demand. Empirical research [6] based on the approach that shareholders are homogenous and that their influence on firm performance is directly proportional to the percentage of equity they hold has failed to produce definitive evidence. Influence of ownership structure [7], variables of external and organisational discipline on financial and economic performance suggests a non-linear relationship between ownership structure and performance. There is some support [8] for the proposition that strategic fit between merging firms improves performance.

The sample used in this research is a stratified sample consisting of 58 organizations from Bosnia and Herzegovina from wood processing industry. In that context, manner of organization, number of employees, geographical distribution and ownership structure of the processed organizations were taken into account.

2. PROBLEM APPROACH AND MATHEMATICAL MODEL

The research was based on posture that related relationship exists between Business Result, as a dependent variable, and Number of Employees, Type of Organization and Ownership, as independent variables. Data used in mathematical analysis were obtained through empirical methodology of polling organizations using carefully designated Questionnaire. The specific definitions and units of measurement of these variables were defined as given below in Table1.

Table 1. Variable definitions and units of measurement

Variable	Abbr.	Description
Business Result	*BR*	is continuous variable that represents the annual profit or loss of a company at the end of the financial year, measured in KM
Number of Employees	*Emp*	is continuous variable that represents number of employees of a company
Type of Organization	*Org*	is categorical variable that represents type of organization and can be: 1. small, one person owned business, 2. partnership, 3. shareholder company
Type of Ownership	*Own*	is categorical variable that represents organizational type of ownership, and can be: 1. privately owned, 2. state owned, 3. more than 50% privately owned, 4. more than 50% state owned

Multiple linear regression model will be constructed and statistical tools such ANOVA analysis, coefficient of determination, R^2, *F*-test, *t*-test, and standardized coefficients will be applied to prove existence of relationship, and to determine variable that most influences Business Result. Multiple linear regression model used in this research is given below.

$$BR = b_0 + b_1 Emp + b_2 Org + b_3 Own \quad \ldots(1)$$

Where b_0, b_1, b_2, and b_3 represents regression coefficients.

Furthermore, variable that most influences Business Result will be separately treated using simple linear regression. As in the case above, the same analysis will be carried out to prove significance of the most influencing variable. Simple linear regression model used in this research is given below.

$$BR = b_0 + b_1 X \quad ...(2)$$

Where b_0, and b_1 represents regression coefficients.

3. RESULTS AND INTERPRETATIONS

Tables numbered from 2 to 5 show statistical results of this research. Detailed interpretations of obtained results in the Tables are given, with final equations as well. These equations determine relationship between Business Result and control variables, and particularly relationship between Business Result and the most influencing variable.

3.1. Multiple linear regression

The ANOVA analysis presented in Table 2. shows that a computed value for the *F*-ratio is 3.936 while the corresponding table value is 2.78 at 0.05 level of significance where df_1=3, df_2=54, and also shows that the multiple linear regression was significant and valid. The R^2 value is 0.179, indicating that regression model could only explain 18 percent of the variation of Business Result by control variables.

Table 2. ANOVA table for multiple linear regression

ANOVA						
	Sum of Squares	Df	Mean Square	F	Sig.	R^2
Regression	521305462274.844	3	173768487424.948	3.936	0.013	0.179
Residual	2383719558209.604	54	44142954781.659			
Total	2905025020484.448	57				

Table 3. shows that regression coefficients b_0, b_1, b_2, b_3 are -55059.121, 308.502, 95326.586, and -101087.280, respectively. Results of the *t*-test indicate that regression coefficients b_1 and b_3 are statistically significant and not equal to zero at 0.05 level of significance (*t*-value for sample size greater than 30 is 1.96 at 0.05 level of significance), while regression coefficients b_0 and b_2 are not statistically significant and it can not be said they are equal to zero. Furthermore, Business Result is the most influenced by Type of Ownership (standardized coefficient equals to -0.336), followed by Number of Employees (0.287) and Type of Organization (0.185). Therefore, the regression equation of Business Result can be given by:

$$BR = -55059.121 + 308.502Emp + 95326.586Org - 101087.280Own \quad ...(3)$$

Table 3. Coefficients of multiple linear regression

	Sum of Squares		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Intercept	-55059.121	190981.137		-0.288	0.774
Emp	308.502	153.716	0.287	2.007	0.050
Org	95326.586	83592.105	0.185	1.140	0.259
Own	-101087.280	45072.527	-0.336	-2.243	0.029

3.2. Simple linear regression

The ANOVA analysis presented in Table 4. shows that a computed value for the *F*-ratio is 7.346 while the corresponding table value is 4.02 at 0.05 level of significance where df_1=1, df_2=56, and also shows that the multiple linear regression was significant and valid. The R^2 value is 0.116, indicating that regression model could only explain 11 percent of the variation of Business Result by control variable Type of Ownership.

Table 4. ANOVA table for simple linear regression

	Sum of Squares	df	Mean Square	F	Sig.	R^2
Regression	336889803030.362	1	336889803030.362	7.346	0.009	0.116
Residual	2568135217454.085	56	45859557454.537			
Total	2905025020484.448	57				

Table 5. shows that regression coefficients b_0, b_1 are 148022.378, and -102467.170, respectively. Results of the *t*-test indicate that regression coefficients b_0 and b_1 are statistically significant and not equal to zero at 0.05 level of significance (*t*-value for sample size greater than 30 is 1.96 at 0.05 level of significance). Therefore, the simple linear regression equation of Business Result and Type of Ownership can be given by:

$$BR = 148022.378 - 102467.170Own \quad ...(4)$$

Table 5. Coefficients of simple linear regression

Coefficients					
	Sum of Squares		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Intercept	148022.378	54152.090		2.733	0.008
Own	-102467.170	37805.566	-0.341	-2.710	0.009

4. CONCLUSIONS

Results of multiple linear regression show that significant relationship exists between Business Result and related control variables. Signs related to control variables show how particular variable influences Business Result. It is also shown that most influencing control variable is Type of Ownership, followed by Number of Employees and Type of Organization, and that proper managing of these variables can significantly improve Business Result.

Results of simple linear regression show that significant relationship exists between Business Result and Type of Ownership. Also, negative sign related to Type of Ownership means that if independent variable Type of Ownership increases than dependent variable Business Result will decrease. So, best Business Result can be expected if Type of Ownership is private (1), and the worst, if Type of Ownership is more than 50% state owned (4).

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