"Innovation Activities and Financial Performance: The Case of Kosovo"

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Abstract: *The aim of this thesis is to investigate the impact of innovation activities and its determinants on the firm performance. For the purpose of empirical analysis, we used Business Environment Enterprise Performance Surveys (BEEPS) firm-level data, conducted by the World Bank and the European Bank for Reconstruction and Development (EBRD) in 2013-2014. To examine the relationship between innovation activities and its determinants to the firm performance, we applied multiple regression analysis and descriptive statistics that gave us clear insights on the topic. Moreover, empirical evidence results of neighboring countries were compared to our findings for each determinant and its effect on firm performance. By investigating the innovation-performance relationship, we found sufficient evidence which supports the main hypothesis. As for the innovation determinants our results indicate that factors as domestic ownership, age, and training affect the tendency of firms to innovate, thus positively affecting firm performance.*

Key words: *performance, innovation determinants, multiple regression analysis,*

I. Introduction

Following global trends and innovations in order to achieve sustainable success has become a sure path to success in developed economies. Considering that creativity is the driving force behind innovation, hiring workforce that presents creative and critical thinking has become crucial for organizations. Rapid technological innovations have also obliged organizations to follow these trends, otherwise these organizations would continue doing business their own way and wait for the expiration date on their business. Furthermore, it is not only businesses that benefit from innovations, but consumers as well. As Beckley claims, "companies that take the largest risk, close the biggest gaps and identify the newest opportunities are rewarded with the title of true innovators and leaders by their consumers and peers" (Beckley, par. 2). So, they set themselves apart from any competition.

One of the ways to measure the results of innovative services or products is through customer feedback, which is measured best through firm specific financial indicatives. It is claimed that an increased financial performance is observed among firms capable of using innovation to improve their processes or differentiate their products in relation to their competitors (Braga, n.d.). So, we would assume that a well-known company introducing a new service or product would have much more demand for its product because of the reputation, the market share, and other positive market indicators that the company has gained from the past. However, there is not much evidence if the same holds for SME's. Bigliardi in her research paper presents her results by asserting that "results suggest that in SMEs the level of technology adopted to develop innovation does not impact on the financial performance" (2012). So, the results of a big company usually do not reflect the same for the market overall. This is why through this paper I will try to research and elaborate the results of the same company size (SME's) and if the same holds in Kosovo's market.

Moreover, this paper strives to offer contribution not only to research but in practice as well. Theoretically, it reviews the literature in order to examine the limits up to where innovation has been studied, so we can finally get an understanding of the relationship between innovation and firm performance of SME's. It is generally hypothesized upon the effects of innovation on big companies, while still little attention has been paid to smaller ones. Not forgetting to mention the existent literature for Kosovo's market. Regarding the practical aspect, the analysis will get broad up to managing innovation in SME's. From the awareness of the managers to be innovative and attain superior performance, results should show which factors related to the innovation developed by the company are influencing more the financial performance.

II. Objective

The objective of this study is to evaluate the effect of innovation activities (product or process innovation) on the financial performance of firms in Kosovo. It will provide concrete insights to shareholders, investors, and creditors concerning the importance of innovation with regard to financial performance. Through this research, I will also try to provide recommendations to be considered by the companies under the study to improve their innovation activities.

Research questions
- Does innovation affect financial performance?
- Which innovations are more preferred in Kosovo's market, radical or incremental?
- Does the innovation effect hold similarly for SME's and big enterprises?
- Which other determinants affect the innovation process and firm performance in overall?

III. Methodology

This study investigates the determinants of innovation and its effect on financial performance of firms in Kosovo. Our empirical results affirmed that innovation and some of its determinants affect positively the performance of the firm. Product and process innovations lead to increase in sales productivity. The research also proved that domestic ownership, age of the firm, and training are indicators of firm innovativeness and better performance.

For the empirical analysis, Stats was used as a statistical program, and the multiple regression analysis along with some descriptive statistics was applied to 202 Kosovo's companies. Sales were treated as indicator of firm productivity and it presented the dependent variable. Other determinants were counted as independent variable on the analysis.

The regression analysis was executed with the independent variables as: innovation activities, size of the firm, domestic ownership, knowledge spill over's, skilled workers, age and age squared, outsourcing, knowledge managements systems, training of the employees and top management experience. However, six out of eleven indicators resulted insignificant in the model; therefore, we did not elaborate on them. While innovation activities, domestic ownership, age and age squared, and training resulted as factors that significantly affect firm productivity in Kosovo. Finally, a result worth mentioning was that on the ownership structure, which for the foreign ownership resulted to lack any impact on labor productivity, while domestic ownership strongly affects the latter. It was surprising, considering the investments that foreigners have done in Kosovo after the war of 1999, which are plenty, but yet it results they do not have a special impact on Kosovo's economy.

Determinants of Firm Performance

The decrease in productivity in the industrialized world in 1970s increased the interest of researchers to measure the effect of innovation on firm productivity (Griliches, 1986). The earliest research models on firm innovation and performance were based on the Cobb-Douglas production function. The "enriched"[1] function they used to model production was of the form:

$$Y_{it} = A_t K^{\alpha}_{it} RD^{\beta}_{it} L^y e^{uit}$$

Y denotes the firms' production output (measured in terms of turnover), K and RD physical and knowledge capital stocks, respectively. A_t represents the technology in use, where t is the time index and u^{it} represents the systematic component of the unmeasured factors, assumed to be randomly distributed. α, β, γ, and ρ are the parameters of interest (Vezzani and Montresor, 2013). So, the revised Cobb-Douglass model included the variable of technology, R&D, and knowledge capital stocks.

And, the investigated relationship between R&D and total factor productivity using data on US firms generally confirmed the positive and significant effect of R&D on productivity. Griliches (1980) used US data on 39 manufacturing industries at 3-digit level for the period 1959-1977. He found that for the first period from 1959-1967 the elasticity of the annual growth rate of productivity with respect to the R&D growth rate was 0.07. However, later on in a study of 1986 Griliches used a larger data set of over 1,000 large companies for the same period. In this study, he differentiated between private and state financed R&D. Therefore, due to the larger and better data set Griliches found slightly higher elasticity of R&D. Among others, he reported three findings in this study. First, R&D contributed positively to productivity increase. Second, basic research appeared to be more important than other types of R&D in relation to productivity, and third, privately financed R&D expenditures appeared more effective than state financed R&D.

However, further we will see that the innovative of approach of firms has changed drastically. It is not one department as R&D the main factor that supports and initiates innovation activities. Today, when employees want to innovate, they have the tendency to break away from the company and pursue their passion individually. As part of this trend they embark on major risks and fund their projects through financial banking schemes. But,

this can hold true when it comes to radical innovations, where completely new markets get discovered. As for the incremental innovations, improvements are made within the organization.

IV. Research Methodology

For the empirical analysis of the thesis we used the firm-level data of Business Environment Enterprise Performance Surveys (BEEPS) conducted by World Bank/EBRD. EBRD uses a large dataset in their surveys, where it includes many European countries, and the Balkan Region as well. However, for the purpose of this research we are going to use the data of Kosovo out of the overall dataset. It was collected in 2013-2014 and it provides a large number of observations which consist of 202 firms of different sizes, starting from the small enterprises to the large ones. For the categorization of firms on the number of employees we used the European Union definition. Furthermore, we created a chart for the size distribution of the Kosovo sample, and it results that most of the surveyed firms were SME's, with 63%. Since there was not a specific number defined for the selection of size categories - for Kosovo – we are left with 2% of large firms in the sample data, which reflects 4 large firms.

Survey Methodology

Regarding the survey methodology, BEEPS is answered in face-to-face interviews by business owners and top managers. Usually, the data is collected from key manufacturing and service sectors in every country. The surveys are designed to provide panel data sets, because panel data is one of the best ways to determine how and which of the changes in the business environment

affect firm-level productivity. In our case, we will measure the level of innovation activity and other determinants in firm performance. The questionnaire consists of questions which enable us to specify the variables of our interest by following the theory. In Table 1 we will give a description of every variable employed in the model

Variable Name	Variable Definition	BEEPS question
Age	Firm's Age	2014 minus the year when the firm was established. In what year did your firm began its operations in this country?
Ages	Firm's Age squared	
Domestic Ownership	Type of owners	Shares owned by private domestic individuals, companies or organizations
E_mailCOM		Use e-mail to communicate with clients or suppliers
Innov_act		Dummy variable =1 if New product / new process=1
Innov_mng_mrkt		Dummy variable =1 if New organizational/management practices introduced or new marketing methods introduced over last three years =1
Productivity	sales /labour	
Know_spill		Spending on acquisition of external knowledge over last three years
Sales	Last years' total annual sales	In last fiscal year, what were this establishment's total annual sales?
Size	Number of Employees	No. of permanent, full-time employees of this firm at end of last fiscal year.
Share of workers with University degree	Skilled workers	% employees at end of fiscal year with a university degree.

V. Data Analysis

To start with, we will provide descriptive statistics of the data for 2013-2014 in two separate tables. Depending on the variables, (i) continuous or (ii) dichotomous, the tables 2 and 3 will be generated to present the data.

Variables	Obs.	Mean	Std. Dev.	Min	Max
Productivity (natural logarithm - Sales per employee)	179	10.16	1.16	7.14	13.34
Foreign ownership	202	0.24	3.45	0	49
Domestic ownership	202	99.26	7.82	0	100
Age (years since establishment)	202	14	9.20	2	62
Size	202	29.14	46.43	3	360
Skilled Workers (% employees with a university degree)	200	17.95	20.33	0	100

Table 2. Descriptive statistics of continuous variables

Referring to the table, we notice that the maximum number of firms that have shares of private foreign owners is 49. This can be considered positive evidence with respect to the openness of business environment to foreign nationals. The sample is made of 202 observations and we are having almost 50% of the firms owned by or having the shares along with foreign citizens. Another independent variable as Age provides us with the result of having still in the market firms as old as 62 years old. It is a positive indicator, since it is a presumption of the firms' effort to remain in the market by following current trends.

Variable	Obs.	Yes	No
Innovation activities	202	62.38%	37.62%
Invest in R&D	202	20.79%	79.21%
New logistical or business support processes introduced over last three years	187	24.60	75.40

Time spent to develop new about products/services	183	77.05 %	22.95%
Training	201	52.74%	47.26%
Knowledge management sys	106	90.57%	9.43%
Collaborations	105	75.24%	24.76%
Outsourcing	105	54.29%	45.71%
New management practices/ marketing methods introduced over last three years	202	65.35%	34.65%

Table 3. Descriptive statistics of dichotomous variables

Table 3 presents descriptive statistics for dichotomous variables. To start with, in the case of Innovation Activities the paraphrased question was "In the last three years, has this establishment introduced new products or services?" Innovate is equal to one if the answer to question is 'yes' and zero otherwise. According to the survey data, 62.38 % of firm respondents have undertaken innovation activities. It is worth noting the difference on the results of Investment in R&D compared to the results of Innovation Activities. A large majority (79.21%) of firms responded with "no" on investments in R&D, which shows that those two not necessarily have a direct effect on each other, meaning that more investment in R&D does not intend more efforts to innovate. Furthermore, we notice a tendency of firms to invest on knowledge management systems; 90.57% is the result which indicates that it is a factor that affects innovation activities. 65.35% is the percentage of firms that have invested in new marketing methods recently; this indicates that Kosovo companies pay specific attention to the way they present their products/services to the consumer.

Multiple Regression Analysis

As previously mentioned, we will empirically investigate the impact of innovation activities and other factors to firm performance. Firm performance will be measured through productivity, which is sales per labor. We will count on it as an indicator of firm performance since in the model it has incorporated the sales of the last fiscal year. The general model to which we refer for the regression analysis is written as follows:

$lnprod\ it = \beta_0 + \beta_1 Innov\_act_{it} + \beta_2 Size_{it} + \beta_3 DOMowner_{it} + \beta_4 Know\_spill_{it} + \beta_5 Skilled\_workers_{it} + \beta_6 Age + \beta_7 Agesq_{it} + \beta_8 Outsourcing_{it} + \beta_9 Knowl\ mng\ sys + \beta_{10} Training_{it} + \beta_{11}\ Top\ MNG\ exp_{it}$

The effect of specific variables, such as innovation activities (which present product or process innovations), size, ownership structure, knowledge spillovers, knowledge of management systems, on the probability to impact labor productivity of a firm 'i' in period 't' are examined.

In order to ensure that the results are robust, we have generated the logarithm of productivity (lnProd) which will be used as a variable for easier comparison with independent variables, and it is a convenient way to express large numbers. The specification estimates 202 number of observations. The regression coefficients and corresponding p-values of the regression model with the empirical results of productivity model are presented in Table 5.

Independent Variables	Dependent Variable: Labour Productivity (lnProd)	
	Coefficients	p-values
Innov_act	0.679**	0.020
Size	0.000	0.505
DOMowner	0.022***	0.000
Know_spill	0.257	0.255
Skilled_workers	0.005	0.332
Age	0.122**	0.047

Agesq	-0.022*	0.092
Outsourcing	-0.100	0.639
Knowledge_mng_sys	0.414	0.381
Training	0.696**	0.013
Top_MNG_exp	0.009	0.450
Constant	5.215***	0.000
Observations	202	

*** p<0.01, ** p<0.05, * p<0.1

Table 4. Regression results of the productivity model

The general findings from the regression model indicate that innovation activities, domestic ownership, age of the firm, and training are significant determinants all positively affecting firms' performance. However, when executing the model with the variables employed it also showed

insignificant coefficients as: size, knowledge spill overs, skilled workers, outsourcing, knowledge management systems, and top management experience. We have positive coefficients on these variables; however, we will not elaborate on them due to their insignificance.

Results of the regression equation numerically presented are below:

$lnprod$ it= 5.215 +0.679 Innov_act$_{it}$ + 0.505Size$_{it}$ + 0.022DOMowner$_{it}$ + 0.257Know_spill$_{it}$ + 0.005Skilled_workers$_{it}$ + 0.122Age + (-0.022)Agesq$_{it}$ + (-0.100)Outsourcing$_{it}$ + 0.414Knowl mng sys$_{it}$ + 0.696Training$_{it}$ + 0.009 Top MNGexp$_{it}$

Before going to the interpretation of the coefficients, some details of the regression model are worth mentioning. The obtained results indicate that we have sufficient evidence to reject null hypothesis that the model has correct functional form at 5% level of significance. The most significant variable effecting labor productivity seems to be domestic ownership, with a significance level of 0.01 it provides us substantial evidence to reject null hypothesis.

Interpretation of Regression Results

After generating the model for labor productivity we calculated the marginal effects coefficients. We find significant coefficients for investments in innovation activities, domestic ownership, age, age square and training which can be interpreted as follows:

➢ The p-value of 0.02 of the innovation activities gives us evidence against null hypothesis. So, we have positive statistical significant coefficient of innovation activities, indicating that more innovative firms have better performance. Based on the coefficient of innovation activities we can conclude that firms that innovate have 68 % possibility of performing better.

➢ The regression results show positive significant impact of domestic ownership on innovation activities. With the significance level of 0.01, it intends that companies owned by Kosovar individuals have 0.22% better productivity.

➢ The relationship between labor productivity and age is found to be statistically significant and also. 0.047 is a critical value but still it stands in the rejection region; therefore, we can conclude from our sample that firm's age does affect the performance of the company.

➢ At the significance level of 0.05, training results to have positive effect in firm performance. An investment on employee training indicates to increase labor productivity for 70%

Main findings of the research

Through our research, we encountered different theories on innovation, and its effect on financial performance. The theory of innovation, referring to the Schumpeterian definition, predicts positive effects on productivity, which results in better firm performance; however, the empirical evidence that we found showed that these theories are not so conclusive. We will refer to the research study published in 2017 in Albania, where the innovation-performance relationship did not hold as we expected (Prifti and Alimehmeti, 2017). The authors note that the relationship was positive, but very weak to produce concrete results for the firms. On the other hand, we have the study done in Macedonia, another neighboring country of Kosovo, where results produce the opposite. Referring to research done by Alili we saw that innovation activities were one of the main reasons of the increased productivity of the firms in Macedonia. In this study 60 private companies were analyzed for a 10-year period, so we can rely freely count on these reliable results to make a comparison with Kosovo's case.

We couldn't find concrete results regarding the types of innovations that Kosovo companies choose; however, through some detailed statistic results, we can draw a fine line on this aspect as well. We saw through the answers in the survey questions that firms in Kosovo make efforts constantly to keep their workforce skilled and equipped with the necessary knowledge for their job. They also invest in new technology and management systems. However, it was admitted that in the last three years' innovations were not applied by the firm (Table

3). The results of investment in R&D in descriptive statistics and the regression model as well are not promising for its direct effect in innovation activities, and productivity indirectly. It is a very small number that accepts to have invested in R&D, and we also have insignificant results in the regression model for the same variable. Based on these facts, we can see that the statement of Bell and Pavia (1993) that firms coming from the developing economies are more focused toward incremental innovations holds true. Kosovo companies' investments in technology and staff may come for these reasons; to keep the pace with other companies regarding new products or processes presented in the market.

This shows us that majority of the firms are focused toward incremental innovations, and it answers to our second research question. Push factors were considered through the paper, and Kosovo is one of the countries were most of the businesses need a change to happen in the environment which leads to change in the strategic orientation of the organization. The literature on countries in transition (Kosovo being one of them) identified firms' internal capacities for innovation as limited, making the introduction of radical innovations less likely and therefore restricting them to mainly incremental innovations.

Traditional strategies are also part of incremental innovations. Pullen et al. claimed that firms can choose on generating or adopting innovations based on their internal capabilities and strategic positioning. Internal capabilities can be estimated starting from the entrepreneur skills and capabilities to direct the firm toward a type of innovation. Considering that domestic ownership resulted to affect productivity positively it is not to be surprised that incremental innovation prevails in Kosovo's economy. This means that these companies still follow the traditional ways of operating, and foreign ownership is not considered within organizational structures, although it can improve for better the innovation climate in organization.

The size of the firms as a factor has been questionable with regard to its effect on innovation activities and productivity. Schumpeter has asserted that firm size is an influential factor for innovation. Larger firms are assumed to be more innovative because they benefit from economies of scale, they have more technological knowledge and capabilities, and can reduce risks by devoting more financial and human resources to the research process. However, in our regression model size resulted insignificant, which means that in some cases it may affect productivity and in some not; but we cannot draw a conclusion on this much questionable factor. It was the example of Italy in a study done by Camagni and Capello (1997) which indicated also that size not necessarily is a precondition for a firm to be more innovative. In Macedonia however, was not the same case. Size resulted to be one of the main factors affecting firm's performance. So, again we have inconclusive theories for Kosovo regarding the size as a determinant of innovation activities.

Age of the firm resulted to have a significant impact in productivity in the case of Kosovo. Similar results were gained form the study in Macedonia as well. On this aspect, Schumpeter argued that usually young entrepreneurs and firms are a synonym of radical innovations. But, our empirical results for Kosovo prove the statement of Freel (2003) to be true, where he maintained that firms accumulate knowledge and experience through time which help them in producing innovation.

So, the results may be contradicting empirically through countries on many considered variables of firm performance; nevertheless, it is important to mention one more time the main determinants that affect firm performance positively in the case of Kosovo. Clear evidence was found demonstrating that innovative activities, domestic ownership, age of the firm, and training, have a positive effect on firm performance. Domestic ownership specifically resulted to be one of the main factors offering better possibilities for companies to succeed in their performance.

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