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DEVELOPMENT OF INNOVATIONS UNDER THE IMPACT OF INTRAPRENEURSHIP ACTIVITIES IN PRODUCTION ENTERPRISES

ABSTRACT

Intrapreneurship activities and their impact on innovations are the subject of the research presented in this paper. The aim of this paper is to investigate and formulate the model of interaction of entrepreneurship activities and innovations based on theoretical and empirical results. The research was conducted based on a survey questionnaire which was distributed to 300 managers at all management levels in production enterprises in Bosnia and Herzegovina. Based on the theoretical background of entrepreneurship and intrapreneurship activities and the relationship between intrapreneurship activities and innovations as well as the results of the research it was concluded that the implementation of intrapreneurship activities positively influences the development of innovations in the enterprise.

Keywords: Entrepreneurship, intrapreneurship, intrapreneurship activities, innovations

1. Introduction

Enterprises in Bosnia and Herzegovina accepted new business approaches and models, including intrapreneurship, which has become an imperative in the struggle for long-term success of companies. The aim of intrapreneurship is to integrate the advantages of small enterprises (creativity, flexibility, market knowledge, etc.) with market resources and the financial strength of large enterprises. For both small and medium-sized enterprises, as well as for large enterprises, exceptional economic dynamism, innovation, and continuous adjustment are required. Traditional entrepreneurial structures disappear, inventive and creative work is re-

quired from employees, who can directly increase the quality, productivity and cost-effectiveness. Intrapreneurship that is implemented in large and medium-sized enterprises through the implementation of appropriate intrapreneurship activities can have a significant impact on the development and implementation of innovations within the entire enterprise.

The subject of the research presented in this paper are intrapreneurship activities and their influence on the development of innovations. The aim of the research is to formulate the model of interaction of intrapreneurship activities and innovations based on theoretical and empirical results.

2. Literature review

2.1 Intrapreneurship and intrapreneurship activities

Different theoretical and practical controversy arises in defining the notion of entrepreneurship. Entrepreneurship can be seen as a value creation process by unifying a unique combination of inputs in the form of exploiting opportunities or market opportunities. The essence of entrepreneurial activity is identification of opportunities and realization of ideas. According to more modern theorists, for example Drucker, an entrepreneurship involves the creation of a new market and a new consumer. Entrepreneurship, as a business activity, strives towards an understanding of how opportunities arise in order to create something new (new products or services, new markets, new production processes or raw materials and materials, new ways of organizing existing technology), and how gifted individuals find or create these opportunities, and then they research and use them in order to achieve different effects (Shane, Venkataraman, 2000).

Intrapreneurship is not a particular type of entrepreneurship but it contains the same basic elements, while the difference is in context. Depending on the individual author, different names, such as entrepreneurial orientation, corporate entrepreneurship, intrapreneurship and entrepreneurial behaviour, are used in the description of the concept of entrepreneurship in the enterprise.

Intrapreneurship represents a challenge of identifying opportunities and developing new ventures within an existing enterprise. Current enterprises are having difficulties in recognizing new ventures, and when they find one, they have difficulties in obtaining the necessary resources and approval to start the implementation of the venture. A fundamental challenge of intrapreneurship was described by Dess et al. (2003), as "...managing the conflict between the new and the old and overcoming the inevitable tensions that arise as a result of the conflict and that needs to be managed..." Intrapreneurship involves the research of resources and possibilities to find within the existing enterprise how and with whose creative action, it is possible to create new products and services and implement and use them.

In the context of this research, the most acceptable definition is that *intrapreneurship is entrepreneurship within large and existing enterprises and involves the creation of a new business venture, innovation or transformation of enterprises by changing*

key business areas, implementing intrapreneurship activities and existing enterprise resources.

In addition to the notion of intrapreneurship, the notion of *intrapreneurship activities* is inseparable. These are activities that are being implemented in existing enterprises from creation to final implementation of an idea or project with an aim at creating an intrapreneurship climate.

Belusova, Gailly and Basso (2010) have conducted a research with an aim at identifying the most important intrapreneurship activities in earlier research related to the notion of intrapreneurship and classification of these activities as a conceptual model of intrapreneurship behaviour. The research results were presented in the paper entitled "A Conceptual Model of Corporate Entrepreneurial Behavior" published in 2010. Intrapreneurship activities are classified into the following four types:

Intrapreneurship research/development activities. There are activities, depending on the way the ideas are created, that are driven by the opportunities, and activities created by the necessity or problem. Occasional activities are created according to vision and experience and are developed on the basis of knowledge and opportunities within the occupation. The ideas that arise as a result of these activities can be described as visionary and are subject to redefinition and redesign in the further course of the idea development.

Intrapreneurship implementation/evaluation of activities. These activities are directly focused on evaluating, focusing and formulating initial ideas in order to fit them into internal strategies and capabilities of the enterprise, as well as in personal visions and ambitions.

Intrapreneurship activities of acceptance/legitimation. These intrapreneurship activities are carried out for the purpose of establishing communication so that an idea is accepted and allowed for realization and ensuring the internal and external legitimacy of the project.

Intrapreneurship activities of exploitation/use. Intrapreneurship exploitation activities are related to concrete actions aimed at obtaining and mobilizing the resources needed to realize a project or idea.

2.2 Innovations

Intrapreneurship activities that have been carried out in enterprises lead to the creation of innova-

tions. Researchers have not yet come up with a unique definition of innovation. In earlier literature, the definitions of innovation were mainly related to the specific characteristics of the innovative products or services to which they relate. Over time, this definition has been extended to areas of organization and marketing (Lam, 2004; Tidd et al., 2005; Nguyen, Mothe 2008; Lunch et al., 2010; Božić, 2011). In order to avoid traps that can limit the essence of innovation, it is necessary to use such an approach that does not simplify things and has a broad view of innovation. Innovation activities vary in nature from enterprise to enterprise. Some enterprises take part in the definition and development of their innovation projects, such as the development and introduction of a new product, while others generally make continuous improvements to their products, processes and operations. Both enterprises can be innovative (Walsh et al., 2008; Jokić, 2009; Potočan, Mulej, 2009).

The general definition of innovation adopted in many countries was proposed by countries gathered for the Organization for Economic Co-operation and Development (OECD) in the early 1990s. It was published in the OECD's Guide for gathering data about innovation entitled the 'Oslo Manual', which was mainly focused on innovation and technology change. The final versions of the definition of innovation and innovation activities presented by the OECD and the European Commission have been published in the Oslo Manual¹ as guidelines for the collection of data on innovation and those are: *Innovation* is the implementation of new or significantly improved products (*goods or services*), or processes, a new marketing method, or a new organizational method in business, workplace organization or in external relations and *innovation activities* are all scientific, technological, organizational, financial and commercial steps that have been made or are intended to be done in the implementation of innovation.

2.3 Innovations as a result of intrapreneurship activities

Based on a given literature review and defining keywords for this research, and based on a similar research that recognizes the positive influence of intrapreneurship on the growth and development of production enterprises (Brigić, Umihanić 2015),

the following hypotheses are in line with the subject and aim of the research:

- H0: Implementation of intrapreneurship activities positively influences the development of innovations in the enterprise.
- H1: Intrapreneurship activities have a direct impact on product innovations.
- H2: Implementation of intrapreneurship activities creates process innovations.
- H3: Intrapreneurship activities create marketing innovations.
- H4: Implementation of intrapreneurship activities leads to innovations in the field of organization.

If we know that the development of the enterprises is closely related to the development of innovations, by defining the aforementioned hypotheses, we have tried to explore the impact that intrapreneurship activities can have on the development of four types of innovations.

3. Research method

The research was based on data collected by using a research questionnaire. The survey included 300 managers from all three management levels in production enterprises in Bosnia and Herzegovina, with the aim of determining their attitudes about the impact of intrapreneurship activities on the construction and maintenance of competitive advantages, in order to determine the way in which they perceive the existing implementation of intrapreneurship activities that create innovations in the field of products, processes, marketing and organizations. The testing and verification of these hypotheses was carried out on the sample of large and medium-sized enterprises in B&H. Statistical data analysis was carried out using the IBM SPSS Statistics v.22, MS Excel and Programming Language R.

3.1 Indicators

The research includes intrapreneurship activities, defined as: *Intrapreneurship activities are activities undertaken within the existing enterprise in order to achieve innovative projects through the stages of research, implementation, acceptance and exploitation.* According to the above definition, intra-

preneurship activities are observed through four indicators:

- Intrapreneurship activities in the field of research / development
- Intrapreneurship activities in the field of implementation / evaluation
- Intrapreneurship activities in the field of acceptance / identification
- Intrapreneurship activities in the field of exploitation / use.

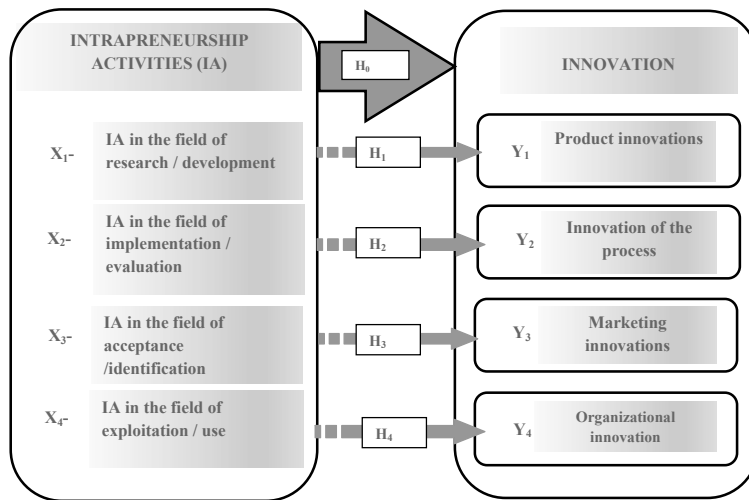
The second group of indicators relates to the measurement of innovations whose definition is acceptable for this research: *Innovation is the application of a new or significantly improved product (good*

or service), process, new marketing method or new organizational methods in business practice, workplace or relationships with the environment. In this research, innovation has been observed through four indicators:

- Product innovations
- Innovation of the process
- Marketing innovations
- Organizational innovation.

Figure 1 shows a theoretical model of the development of innovations based on intrapreneurship in production enterprises with the relation of indicators as independent and dependent variables formulated through central and operational research hypotheses.

Figure 1 Theoretical model with the relationship of indicators as independent and dependent variables



Source: Authors

3.2 Research sample

For the purpose of examining the hypotheses, data collection has been performed in enterprises where there is, or should be, intrapreneurship activity, which as such creates innovations. Such enterprises are production enterprises that have a continuity in business of at least three years and according to their size are either large or medium enterprises. The databases of the AFIP - Agency for Financial, Informatics and Intermediary Services in Sarajevo (FIA - Financial Information Agency, Sarajevo) and APIF - Agency for Mediation, Informatics and

Financial Services in Banja Luka were used as the source. Based on 2014 financial reports we identified legal persons/enterprises from the territory of B&H which, in accordance with the provisions of the Law on Accounting and Auditing of the Federation of Bosnia and Herzegovina and the Law on Accounting and Auditing of the Republic of Srpska meet the criteria of belonging to medium and large enterprises, and have registered main activity according to the Classification of Activities of B&H in 2010, areas A, B, C and E, classes: from 01.11 to 35.30 and from 41.10 to 43.99. The above mentioned criteria was fulfilled by 661 enter-

prises. Based on official financial reports of these enterprises for 2012, 2013, 2014 and calculations of the share of revenue coming from the production activity (position 206 in the balance sheet) compared to total revenue (position 201 in the balance sheet), there were 504 enterprises whose share of sales originating in production was higher than 50%. Therefore, it can be concluded that their activity is predominantly production. Out of these 504 enterprises, based on the achieved business results in 2014, a total of 432 enterprises were profitable. Our basic set/population thus consists of 432 enterprises that meet the criteria of medium and large enterprises with a predominant production activity, i.e. those that generated more than 50% of their revenues from production activity in the last three years, and that posted positive results in 2014.

The sample consists of 300 managers from 100 B&H enterprises. Representativeness of the sample is ensured by stratification. Strata are administrative units: cantons in the Federation of B&H, the regions in the Republic of Srpska and the Brčko District. They belong to the category of large and medium enterprises in accordance with the provisions of the Law on Accounting and Auditing of the Federation of Bosnia and Herzegovina and the Law on Accounting and Auditing of the Republic of Srpska. 23.15% of enterprises from the population are included in the sample; both the structure and the population are fully represented. The sample was formed by random selection from the population, based on the table of random numbers, making sure to preserve representativeness of the enterprises from the population and the representation of all the strata.

3.3 Tools for statistical analysis

Statistical data analysis was carried out using the IBM SPSS Statistics v.22, MS Excel, and R. programme language. Descriptive statistical analysis was used to describe the distribution of variables obtained by the survey research in the paper, and calculate the frequencies, percentages, and arithmetic meanings with corresponding standard deviations. Multivariate statistical methods of interdependence and dependence were applied for the testing of the research hypotheses. As a result of the statistical interdependency technique, the Principal Components Analysis was used to reduce the original space of the variables and to distinguish a fewer

number of factors that would comprise the main components (linear combination of the selected variables) with the preserved maximum amount of information (maximum variance), and then the reduced variables were used in further analytical procedures. The obtained components refer to the key dimensions of the independent and dependent variables measured in the research process. Analysis of the impact of various components of intrapreneurship activity on innovation components was carried out with Multiple Linear Regression Analysis. Using this methodology, statistical models were obtained with significant representation and which can evaluate the determination of independent components, as well as the strength of the influence of each independent component on the dependent component. Prior to the implementation of the aforementioned statistical methods, a review was conducted to check whether the achieved variables measured in the research met the statistical assumptions of such techniques. Therefore, the universal statistical assumptions were checked on which these methods are based; the normality of the distribution of variables and the presence of univariate atypical outliers. Testing of the assumptions of univariate normality was verified by the histogram of the frequency of modalities, while the presence of atypical outliers was verified by Mahalanobis distance. All achieved coefficients obtained in these statistical methods were tested with an alpha level of significance of 95% (5% risk). The results are shown in tables and graphically.

4. Research results

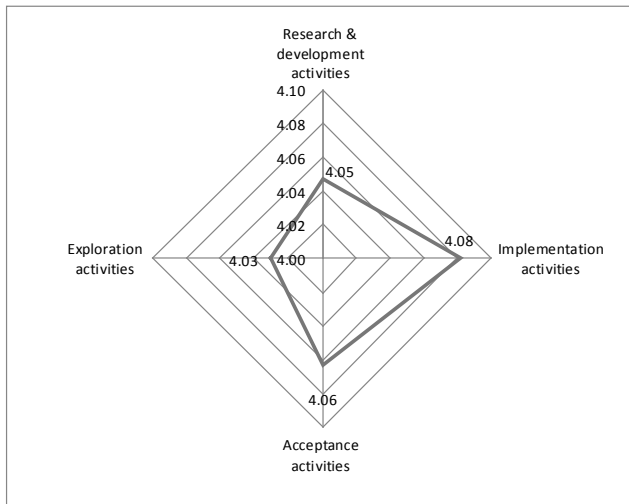
The research of the impact of intrapreneurship activity on the basis of innovation is one of the important aspects of planning future development at the enterprise level, at the regional or national level, or at the level of one branch of the economy. One of the main tasks in this research is to establish a causal relationship between intrapreneurship activities and innovations. In order to do this, it is necessary to include specific indicators in the research that can facilitate the analysis of the development of innovations under the influence of intrapreneurship activities. Unlike developed countries, in statistical data that are available in our country, there is not enough data with which it is possible to establish any analytical correlations between intrapreneurship activities and innovations.

4.1 Descriptive statistical analysis of respondents' attitudes towards intrapreneurship activities and innovations

Respondents dominantly provided above-average grades for various claims related to intrapreneurship activities and innovations. The average values² of the various elements of the intrapreneurship activities are shown on the radar Graph 1. On the basis of the average values of the four elements, it can be concluded that enterprises, to a greater extent,

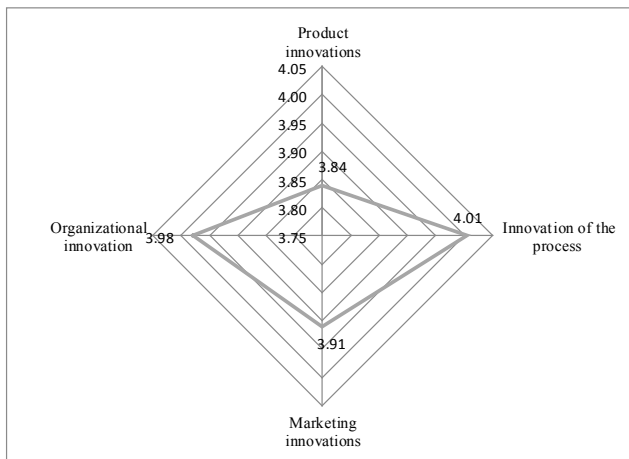
apply implementation activities, as intrapreneurship activities, while exploitation activities are applied to a lesser degree. When it comes to the distribution of average values of the responses towards various elements related to innovation, enterprises mostly implement innovation of processes (M = 4.01), as well as organizational activities (M = 3.98), while to a somewhat lower degree, enterprises apply intrapreneurship activities such as marketing innovations (M = 3.91) and product innovation (M = 3.84), which can be seen in Graph 2.

Graph 1 The ratio of intrapreneurship activities in the enterprise



Source: Authors

Graph 2 The relationship between different elements of enterprise innovation



Source: Authors

4.2 Results of the reduction of variables using the analysis of the main components

After reduction through application of the Principal Components Analysis, the obtained factors (components) refer to the 8 key dimensions of the independent and dependent variables measured in the research process, such as: research and development activities, implementation activities, acceptance activities, exploitation activities, product innovations, innovation process, marketing innovations and organizational innovations.

4.2.1 Results of reduction of variables of intrapreneurship activities of enterprises

In the process of extracting a maximum variance of the measured intrapreneurship activities, by using the analysis of the main components, the Kaiser's criterion and the Eigen values were applied. Each given dimension was measured through 5 items. The obtained results lead to the conclusion that the extraction of the main components with the selected variables is suitable for factor analysis. Based on further statistical research, one component was obtained which has a characteristic value of 3.32 and contains 66.5% of the variance. Implementation activities show one component that has its own inherent value of 3.44 and a percentage of variance of 68.7%. The component of the acceptance activity has a characteristic value of 2.9 and a percentage of variance of 58.8%. The component of the exploitation activity exhibits a characteristic value of 3.2 and 63.6% variance.

4.2.2 The results of reducing the innovation variables in the enterprise

For further research purposes the same statistical procedures have been applied for extraction of values of variables that measured four dimensions of the innovation level of the enterprise and those are: product innovations, process innovations, marketing innovations and organizational innovations. The obtained results lead to the conclusion that the extraction of the main components with the selected variables is suitable for factor analysis. The achieved results show the percentage of variance and the height of the inherent value for the number of possible components in each measured innovation. The results indicate that it is possible to select an optimal component with an inherent value greater than 1, both for product innovations, as well

as in process innovations, marketing innovations and organizational innovations.

4.3 Results of research hypotheses using regression methods

In order to quantitatively respond to the defined research hypotheses, a series of simple and multiple regression models was carried out. In the regression models the obtained logical dimensions were used based on the analysis algorithms of the main components that were previously presented. The most common statistical assumptions on which multiple linear regression is based are; absence of multicollinearity, absence of atypical points, normality, linearity, homogeneity of variance and independence of residuals. The presence of multicollinearity in the set models was carried out by diagnostics of collinearity. In order to conduct a review of atypical points, normal distribution of residuals, linearity, homogeneity of variance and independence of residuals in models, we used visualizations (such as diagrams of dissipation of standardized residuals and standardized predicted values, and histograms of frequencies of standardized residuals). No serious violation was observed by checking the listed statistical assumptions of the regression models.

4.3.1 Impact of intrapreneurship activities on creating innovations

The research assumption that intrapreneurship activities have a direct impact on product innovations has been tested with multiple regression models. As a set of independent variables, four components of intrapreneurship activities are included: research and development activities, implementation activities, acceptance activities and exploration activities, while the dependent variable in the model represented a component of the enterprise's product innovations. The aim of this model is to create a regression model for the enterprise product innovation variant that will contain the explanation of the variability caused by the variations of independent variables, in this case the components of intrapreneurship activities. The regression model is statistically significant with the realized probability of $p < 0.000$ ($F = 162.45$). The model determines the variation of the innovation of the enterprise's products, based on the influence of the components of the intrapreneurship activity in the model, with a rate of 68.8% ($R^2 = 0.688$), while the corrected coefficient of model determination is 68.4% (Adjusted $R^2 = 0.684$) and does not differ too much from the

coefficient of determination, which confirms that the model contains the optimal number of independent variables in relation to the number of observation units (respondents). On the basis of these results, we can conclude that the model is good and that we can consider it representative.

Testing of the research hypothesis that implementation of intrapreneurship activities creates process innovations has been done by using a multiplicative regression model that includes four components of intrapreneurship activities: research and development activities, implementation activities, acceptance activities and exploration activities, while this time the dependent variable in the model was a component of the process innovation enterprises. In order to be able to fully respond to the research hypothesis, the aim of this model is to create a regression variable of the innovation process of the enterprise that will contain an explained variability caused by the variations in intrapreneurship activity of the enterprise. The realized model with predictors of intrapreneurship activities explains a total of 60.6% of the process innovation variability ($R^2=0.606$), and the model is significant with a probability of $p<0.000$). On the basis of the obtained results, we can argue that the growth of intrapreneurship activities causes the growth of the process innovations in the enterprise.

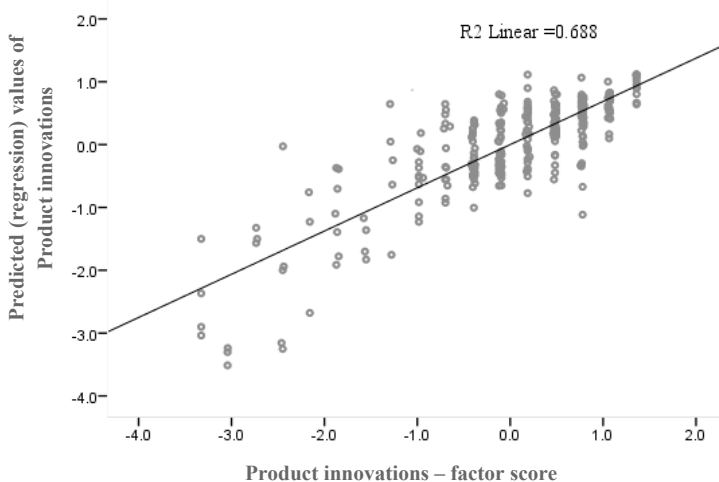
The research hypothesis that intrapreneurship activities create marketing innovations is tested by

using a multiple regression model that includes the components of the intrapreneurship activities of enterprises and is linked to a component of marketing innovations. An obtained regression model statistically significantly ($p<0.000$) explains 46.1% variance of marketing innovations based on the multiplicity of components of intrapreneurship activities ($R^2=0.461$). We can argue that the growth of intrapreneurship activities in the enterprise also causes the growth of various marketing innovations in the enterprise.

The research assumption that the implementation of intrapreneurship activities lead to innovations in the field of the organization was tested with similar procedures as well as previous hypotheses. By quantifying the influence of components of intrapreneurship activities on organizational innovations, a model was developed that explains a total of 52% of variability, i.e. variance ($R^2=0.520$) and is statistically significant ($p<0.000$). Therefore, we can say that increasing the level of intrapreneurship activities of the enterprise is likely to increase the level of organizational innovations.

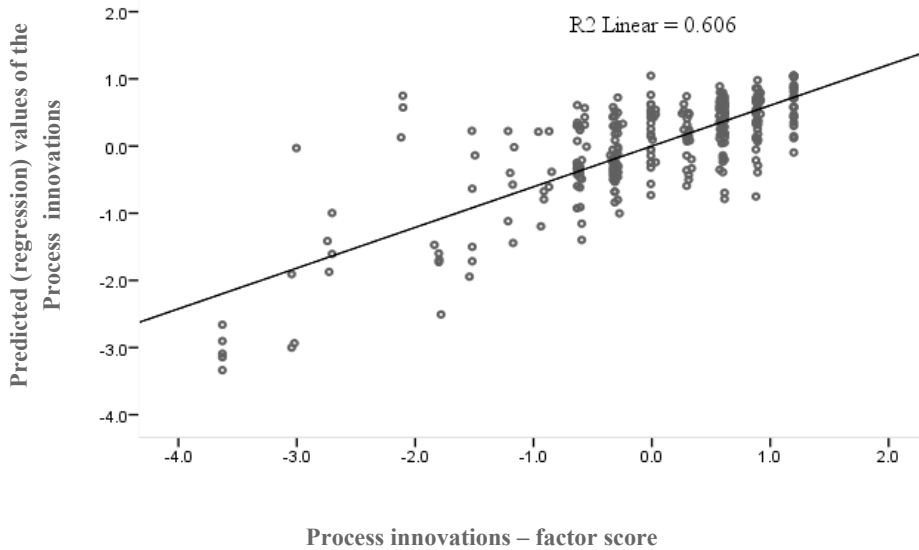
On the scatter diagram (Graph 3 to 6), the linear relationship between the actual and the model of the predicted (regression) value of the innovations of the enterprise was presented, with the best fit line. It can be clearly seen that the growth of intrapreneurship activities in the enterprise is accompanied by the growth of innovations in the enterprise.

Graph 3 The relation between the actual values of product innovations and the model of the predicted (regression) value of product innovations



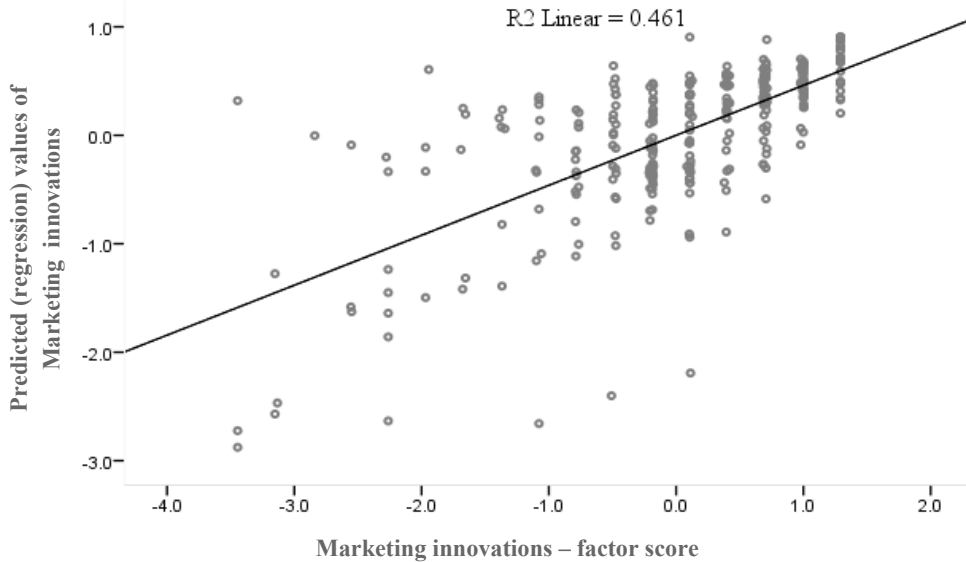
Source: Authors

Graph 4 The relation between the actual values of the process innovations and the model of the predicted (regression) value of the process innovations



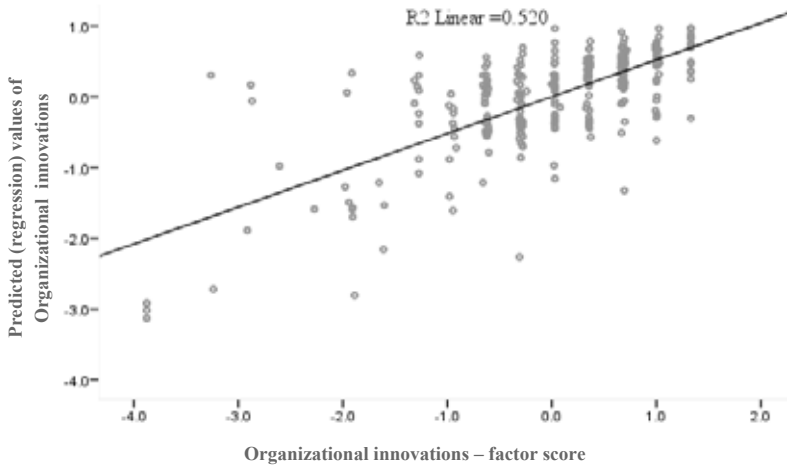
Source: Authors

Graph 5 The relation between the actual values of marketing innovations and the model of predicted (regression) values of marketing innovations



Source: Authors

Graph 6 The relation of real values of organizational innovations and the model of predicted (regression) values of organizational innovations



Source: Authors

In order to be able to conclude which components of intrapreneurship activities have the greatest impact on innovation in the enterprise, we will observe standardized (Beta) regression coefficients. The realized regression model, with calculated regression coefficients (B), can be represented by the following linear equations:

$$Y_1 = 0.00 + 0.171x_1 + 0.069x_2 + 0.193x_3 + 0.462x_4$$

$$Y_2 = 0.00 + 0.239x_1 + 0.098x_2 + 0.067x_3 + 0.440x_4$$

$$Y_3 = 0.00 + 0.085x_1 + 0.127x_2 + 0.131x_3 + 0.389x_4$$

$$Y_4 = 0.00 + 0.180x_1 + 0.325x_2 - 0.017x_3 + 0.296x_4$$

where:

Y_1 = Product innovations

Y_2 = Process innovations

Y_3 = Marketing innovations

Y_4 = Organizational innovations

x_1 = Research and development activities

x_2 = Implementation activities

x_3 = Acceptance activities

x_4 = Exploration activities

Therefore, under the condition that other factors stay unchanged, if the research and development activities in the enterprise increase by one unit of measurement, one can expect product innova-

tions in the same enterprise to increase by about 0.17 units of measurement, process innovations by 0.239 units of measurement and organizational innovations by 0.180 units of measurement. Also, if the enterprise's expansion activity increases by one unit of measurement, one can expect growth of product innovations on average by 0.462 units of measurement, process innovations by 0.440 units of measurement, marketing innovations by 0.389 units of measurement and organizational innovations by 0.296 units of measurement.

5. Discussion and conclusion

In order to build an enterprise that can be competitive on the market while maintaining its competitive advantage in the conditions of uncertainty and crisis is one of the basic tasks for managers. There are many different and simultaneously related activities made by managers in order to build and maintain the competitive advantages of the enterprise. One of these activities is to create innovations in the enterprise. Enterprises that have established an organizational structure and a basis for long-term business, one of the possible mechanisms for creating innovations is intrapreneurship. This research aimed to answer the question of whether by implementation of intrapreneurship activities an enterprise can develop innovation. Accordingly,

a central research hypothesis and four operational hypotheses have been defined.

In this research, the first research hypothesis that was tested stated that *intrapreneurship activities have a direct impact on product innovations*. The results of the testing showed that for three, out of a total of four intrapreneurship activities, there is a statistically significant impact on product innovations, i.e. if research and development activities in the enterprise increase by a single unit of measure, one can expect the growth of product innovations in the same enterprise by about 0.17 units, provided that other factors stay unchanged. Also, if the enterprise acceptance activities increase by one unit, one can expect an increase in product innovations on average by 0.193 units. Increasing the enterprise's exploitation activity by a single unit will cause an average increase in product innovations by 0.462 units. Implementation activities in the enterprise do not have a statistically significant impact on product innovations, that is, for one unit of increase, one can expect growth of innovations on average by 0.069 units. On the basis of the test results, a working hypothesis was confirmed that intrapreneurship activities have a direct impact on product innovations.

By testing the second working hypothesis that the process of intrapreneurship activities creates process innovations, the following results are obtained. If the enterprise increases research and development activities by a single unit, then it can expect an average increase in the process innovations by 0.239 units. Also, if the enterprise increases the exploitation activities by a single unit, then the process innovations will be increased to an average of 0.440 units. It has been proven that these two groups of intrapreneurship activities have a statistically significant impact on process innovations, while the same does not exist for intrapreneurship implementation activities, whose increase by one unit of measurement results in an average increase in process innovations by 0.098 units of measurement, i.e. for intrapreneurship acceptance activities whose increase by one measurement unit causes an increase in process innovations by 0.067 units. The obtained results lead to the acceptance of another working hypothesis. We accept the hypothesis that the implementation of intrapreneurship activities creates process innovations in the enterprise.

By testing the third working hypothesis that states that *intrapreneurship activities create marketing*

innovations, it has been confirmed that intrapreneurship exploitation activities have a statistically significant impact on the creation of marketing innovations. It is such that intensity for a single unit of increase causes the average growth of marketing innovations of the enterprise by 0.389 units. For the remaining three groups of intrapreneurship activities, there is no statistically significant influence on the creation of marketing innovations: the activity of research (0.085), the implementation activities (0.127) and acceptance activities (0.131). On the basis on these test results, we accept the third working hypothesis that intrapreneurship activities create marketing innovations.

The fourth working hypothesis states that *implementation of intrapreneurship activities leads to innovations in the field of organization*. After the conducted testing we have obtained results that an increase in intrapreneurship research and development activities in the enterprise by one unit of measurement leads to an increase in the level of organizational innovations by 0.180 metric units, under the terms that other factors stay unchanged. If the intrapreneurship implementation activities of the enterprise's increases by one unit of measurement, then on average organizational activities will increase by 0.325 measuring units. Also, the growth of intrapreneurship activities for exploitation of one unit of measurement leads to the growth of organizational innovations in the enterprise on average by 0.296 units of measurement. The statistical significance of the influence of intrapreneurship activities of acceptance of creating organizational innovations by testing has not been proven (-0.017). In the course of the test results, we accept the hypothesis that the implementation of intrapreneurship activities leads to the development of innovations in the field of organization.

Based on the results of the tests carried out for the four working hypotheses, we have come to the exact indicators that the implementation of intrapreneurship activities positively influences the development of innovations in the enterprise, which has proven the central research hypothesis and thus solved the problem posed before this research.

According to the results of the research, it can be concluded that the theoretical model has an established way of measuring the level of intrapreneurship activities and innovations in the production enterprises, and that it is possible to determine the average increase in innovations resulting from an increase in intrapreneurship activities by the same model.

The presented model has a precisely defined way to measure the existence of all variables: four types of intrapreneurship activities (research, implementation, acceptance, and exploration) and four types of innovations (product innovations, process innovations, marketing innovations and organizational innovations). Using the measuring methodology it is possible to determine at what level all the observed variables are found in each production enterprise. Then, based on the intensity of the modeled prognosis, it is possible to forecast the average increase of any kind of innovation if intensification increases intrapreneurship activities.

Considering that the survey was done on a sample of 100 different enterprises in terms of size and type of production activity, the model has application in all production enterprises that belong to the category of medium and large enterprises.

The results of the research, both theoretical and empirical, are intended for enterprises engaged in production and will primarily be used by large and medium-sized enterprises, but also with state institutions, branch associations, and other researchers who are researching this or similar problem. The results of the research pointed to the importance of intrapreneurship in enterprises in the function of creating innovations.

The research gave rise to a model of the impact of intrapreneurship activities on innovations in the enterprise. Bearing in mind that all enterprises are covered by this research, it is possible on the basis of this model to define the limits of the application on this model. This model is not applicable to enterprises whose primary and predominant activity is not production, nor enterprises that are classified as small enterprises. Namely, this research includes enterprises whose activity is related to production and which generate more than 50% of the income from basic production activity. All enterprises that have been the subject of this research are classified as large or medium-sized enterprises. Therefore, in applying this model, this should be put as a limitation.

Research, as one of the results, can provide guidance for future research in this field. Namely, the lessons from this research and guidelines for future research can be stated as follows:

- To strive to recognize comparable measures of quantitative character and ways of measuring them for all variables that has the effect of innovating. In this way, it would be even more accurate to measure the impact of individual intrapreneurship activities in the enterprise.
- To conduct research on the impact of intrapreneurship activities on innovations within an industry, for example in the IT sector or the automotive industry, etc., and then compare the results of the research with those conducted in other industries, or to make parallel comparisons in different industries.
- To research the impact of intrapreneurship activities on innovations in enterprises belonging to specific regions or markets and then compare the obtained results.
- To research the impact of intrapreneurship activities on innovations in enterprises that have a long-term success and growth in relation to enterprises whose business is in stagnation.
- To conduct research on this subject in highly developed countries and developing countries and compare the research results in order to identify the reasons for the success of the highly developed countries and to make recommendations for the developing countries.

In addition to these several specific guidelines, one general guideline for all future researchers is to freely engage in research on this topic and seek to contribute to the business and science community in order to identify ways to innovate in enterprises and thereby enhance their competitive advantage. We believe that this is especially significant for researchers from Bosnia and Herzegovina, because it is necessary to find ways for developing innovation in our enterprises in B&H and the environment, and thus strengthen the competitive position of our enterprises, which would enable their growth and the growth in the Bosnia and Herzegovina economy as a whole.

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ENDNOTES:

- 1 OECD (2005), "Oslo Manual – Guidelines for Collecting and Interpreting Innovation Data", 3rd Edition, OECD, Paris.
- 2 The values of the presented elements of intrapreneurship activity are calculated as arithmetic meanings of claims related to a particular element.

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RAZVOJ INOVACIJA POD UTJECAJEM INTRAPODUZETNIČKIH AKTIVNOSTI U PROIZVODNIM PODUZEĆIMA

SAŽETAK

Intrapoduzetničke aktivnosti i njihov utjecaj na razvoj inovacija predmet su istraživanja prezentiranog u ovome radu. Cilj istraživanja je da se na temelju teorijskih i empirijskih rezultata istraži i oblikuje model povezanosti intrapoduzetničkih aktivnosti i inovacija. Istraživanje je provedeno anketiranjem 300 ispitanika u proizvodnim poduzećima iz Bosne i Hercegovine. Na temelju teorijskih spoznaja o poduzetništvu i intrapoduzetničkim aktivnostima i odnosa između intrapoduzetničkih aktivnosti i inovacija, kao i rezultata istraživanja, zaključeno je da implementacija intrapoduzetničkih aktivnosti pozitivno utječe na razvoj inovacija u poduzeću.

Ključne riječi: poduzetništvo, intrapoduzetništvo, intrapoduzetničke aktivnosti, inovacije