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# APPLICATION OF STRUCTURAL EQUATION MODELING IN FUNCTION OF SUSTAINABLE SUCCESS OF BUSINESS ENTITIES

***Abstract:*** *The need to introduce sustainability issues in business entities in Serbia appears as a business existential, in the foreground, and then as social and developmental need. In addition, the issue of sustainability is also a response to the challenges, such as: Laws, globalization, increased customer expectations and competition. Economic operators must constantly improve their services and products in order to meet the needs of all its stakeholders. This directly affects: the effectiveness of undertaking the competition and its survival. Application of ISO 9004: 2009 is in fact only one step towards sustainable success of the enterprise. Improving the quality systems in businesses provides its survival. Sustainable success of the undertaking can be viewed through the prism of management: business processes, human resources and innovation. Subject of this paper is to define and establish realistic models for the sustainable success of business entities on a sample of 120 business entities in the Republic of Serbia, which later can be improved, because of its dynamics. This paper is just one part of research before future doctoral thesis of author Dejan Obućinski.*

***Keywords:*** *SEM, process management, human resources management, innovation management, sustainable success, business entity*

## 1. INTRODUCTION

Clear directions of the enterprise strategies affect their sustained success [1]. Businesses should: monitor, measure and analyze their business performance due to turbulent dynamic environment in which they income [2]. By fulfilling the needs of its customers business entities achieve sustainable success, which should constantly improve [3]. The process should be realized as a management system by creating and understanding a network of processes, their sequence and interaction [4]. Reforms of business entities are inevitable, they need to be more innovative, to understand their environment and face emerging changes [5]. Awareness of the environment, learning and knowledge are important factors in effective management of the entity [6;7]. By quality standard ISO 9004: 2009, sustained success of the enterprise can be achieved by effective management and through the proper application of any innovation to improve any or both of them. The role of the leader is of particular importance in the implementation of the overall quality, as well as sustained success which is based on continuous improvement, learning and innovation [8;9;10]. Identifying and overcoming resistance to change is always a complex and lengthy process. The focus of interest of business entities should be in the business orientation. Practice tells us that a large number of companies over the past twenty years in Serbia ended with business failure, because the business orientation was directed at technical solutions, discarding the business change and business process management [11]. Management of business, means managing its business processes. Business processes are the core of a business entity, because business primarily consist of the process, it is not just a service or product [12]. In today's successful business people have treatment of intellectual capital. Business operators need more to invest in people - employees to discover and develop their potential, hidden features, talents, skills,

etc. Human resources directly affect the sustainable success of the enterprise. To achieve sustained success, it is necessary to adopt an economic entity "learning organization" and "learning that integrates the ability of individuals with the ability of the organization".

Quick access to such knowledge, as well as its use can increase the ability of the organization to perform management and maintain its sustained success (ISO 9004: 2009) .On the basis of the above, arose the idea that this paper analyzes the scientific and professional association management functions of business processes, human resources and innovation as key drivers for improving the sustainability of businesses on the set model (Figure1).

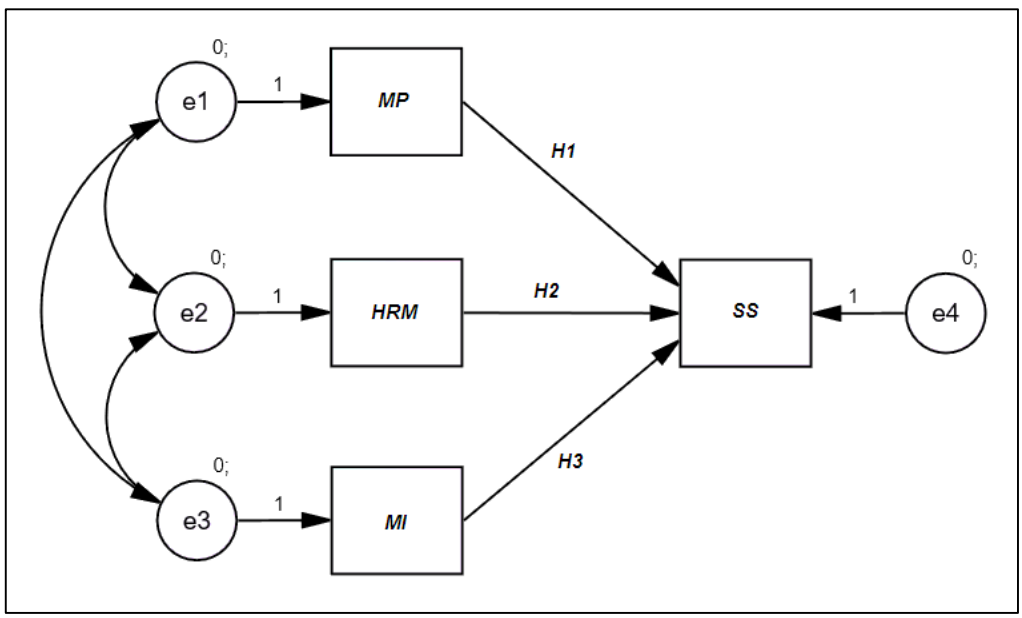


***Figure 1.*** *System model*

## 2. STRUCTURAL EQUATION MODELLING

The main objectives of Structural Equation Modeling (SEM) are evaluation of the model fitting and parameter estimation of the set, that is, of this defined model [13].

On figure 1 given is the model that describes the impact of the set of variables of interest to our research, namely:

A. three independent variables:
   1. process management (MP),
   2. Human Resources Management (HRM),
   3. Management Innovation (MI).

B. dependent variable: sustained success (SS).

### 2.1. Goals and tasks of research

Basic goals of the work are to establish: whether the management of business processes, human resources and innovation in function of the sustainable success of business entities.The final goal is to complement scientific knowledge about the achievements of theoretical thought and try to put management of business processes, human resources and innovation as drivers of change in the sustainable success of business entities

A special scientific goal of the work is that based on the results of research design a model that would contribute to a better concept of sustainable success in our conditions and the current situation of the business entities

## 3. PARTIAL REGRESSION ANALYSIS OF A SYSTEM MODEL

E-questionnaire included 120 samples of economic entities in the Republic of Serbia in the period from 01.03.2017. to 01.04.2017. year. The set system model can be analyzed partialy, which means that we can determine the mutual influence of variables on the basis of defined relations by segment as follows:a) the impact of MP on the SS,b) the impact of HRM on SS, and v) the impact of MI on SS.

### 3.1 Partial regression analysis of the MP impact on the SS

It is defined standardized evaluation model shown in Figure 2.

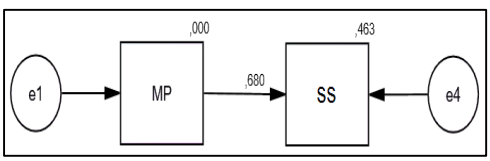


***Figure 2.*** *Standardized evaluation model for MP impact on SS*

From the (Figure 2) we can tell the value of the coefficient of determination, which is R = 0.463, and he tells us that with 46.30% of the variability of the dependent variable SS can be explained by the influence of of the independent variable MP.

The correlation coefficient is r = 0.680. Here the variables are positively moderatly correlated - related

Regression equation can be compiled on the basis of the values (Figure 2) and it reads

$$y_4 = 0{,}955 \cdot x_1 + 0{,}262 \text{ or}$$

$$SS = 0{,}955 * MP + 0{,}262$$

On Figure 3 is given diagram of regression of the standard residuals and it shows the values of the expected cumulative probability and observed cumulative probability.

Here we see that there are no major deviations from normality, most of the value follows the line from the lower left to the upper right corner of the diagram.

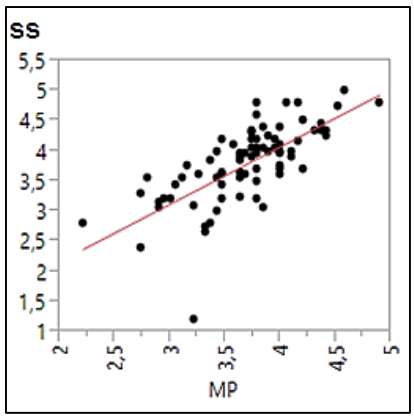


***Figure 3.*** *Standard regression of the residual for the dependent variable SS*

Based on the results we can confirm that process management significantly affect the sustainable success of business entities.

### 3.2 Partial regression analysis of the HRM impact on the SS

From the (Figure 4) is indicated that the value of the coefficient of determination, which is R = 0.407, and he tells us that with 40.70% of the variability of the dependent variable SS can be explained by the influence of of the independent variable HRM. The correlation coefficient is r = 0.637. Here the variables are positively moderately correlated - related.

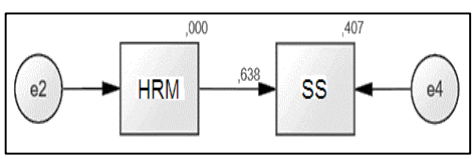


***Figure 4.*** *Standardized evaluation model for HRM impact on SS*

Regression equations can be compiled on the basis of the values (Figure 4), and it reads:

$$y_4 = 0{,}707 \cdot x_2 + 1.251 \text{ or}$$

$$SS = 0{,}707 * HRM + 1{,}251$$

On Figure 5 is given diagram of regression of the standard residuals and it shows the values of the expected cumulative probability and observed cumulative probability. Here we

see that there are no major deviations from normality, most of the value follows the line from the lower left to the upper right corner of the diagram.

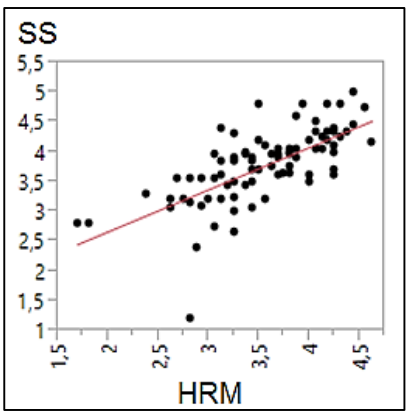


***Figure 5.*** *Standard regression of the residual for the dependent variable SS*

Based on the results we can confirm that management of human resources significantly affect the sustainable success of business entities.

### 3.3 Partial regression analysis of the MI impact on the SS

From the (Figure 6) can be read coefficient of determination equal to R = 0.459, and he tells us that with 45.90% of the variability of the dependent variable SS can be explained by the influence of of the independent variable MI. The correlation coefficient is r = 0.678. Here the variables are positively moderately correlated- related.

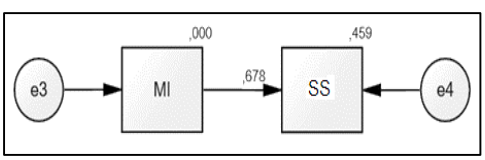


***Figure 4.*** *Standardized evaluation model for MI impact on SS*

Regression equations can be compiled on the basis of the values (Figure 6) and it reads:

$$y_4 = 0{,}661 \cdot x_3 + 1{,}491 \text{ or}$$

$$SS = 0{,}661 \cdot MI + 1{,}491$$

On Figure 7 is given diagram of regression of the standard residuals and it shows the values of the expected cumulative probability and observed cumulative probability. Here we see that there are no major deviations from normality, most of the value follows the line from the lower left to the upper right corner of the diagram.

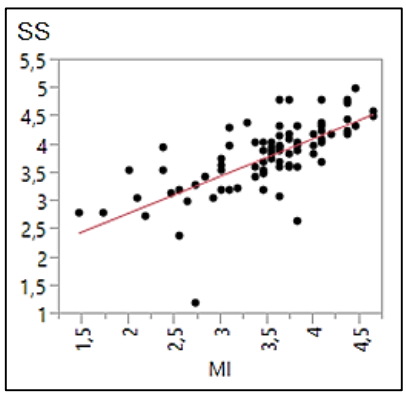


***Figure 7.*** *Standard regression of the residual for the dependent variable SS*

Based on the results we can confirm that innovation management significantly affect the sustainable success of business entities.

## 4. MULTIPLE REGRESSION OF SYSTEM MODEL

Placed system model can be analyzed multiple, which means that we can determine the mutual influence of several variables on the basis of the defined relations, namely: the impact of MP, MI and HRM on the SS.

It is defined standardized evaluation model shown in Figure 8.

From (Figure 8) can be read value of determination coefficient R = 0.553, and it tells us what percentage of the variance of the dependent variable SS is explained in the model. This means that 55.30% of the variability of the dependent variable SS can be explained by the influence of the independent variables: MP, HRM and MI. The correlation coefficient is r = 0.743. Here are the variables positively moderatly correlated - related. The influence of independent variables MI is the largest and amounts 0,351 compared to the impact of independent variables HRM which is 0.127 and MP which is 0.345. The correlation

coefficient between independent variables: MP and HRM is r = 0.750, which indicates that the independent variables are mutually moderately correlated - related. The correlation coefficient between independent variables: MP and MI is r =0.683, which indicates that the independent variables are mutually moderately correlated - related. The correlation coefficient between independent variables: HRM and MI r = 0.717, which indicates that the independent variables are mutually moderately correlated - related.

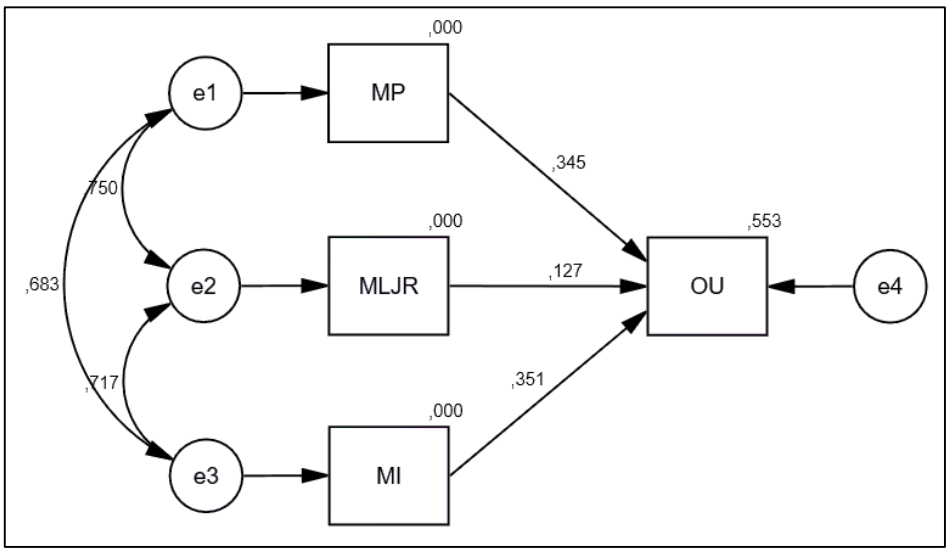


***Figure 8.*** *Standardized multiple evaluation model*

Multiple regression equations can be compiled on the basis of the values (Figure 8) and it reads:

$$y_4 = 0{,}484 \cdot x_1 + 0{,}141 \cdot x_2 + 0{,}342 \cdot x_3 + 0{,}310$$

or

$$SS = 0{,}484 * MP + 0{,}141 * HRM + 0{,}342 * MI + 0{,}310$$

On Figure 9 is given diagram of regression of the standard residuals and it shows the values of the expected cumulative probability and observed cumulative probability. Here we see that there are no major deviations from normality, most of the value follows the line from the lower left to the upper right corner of the diagram.

Based on the results we can confirm that processes management, human resource management and innovation management significantly affect the sustainable success of business entities.

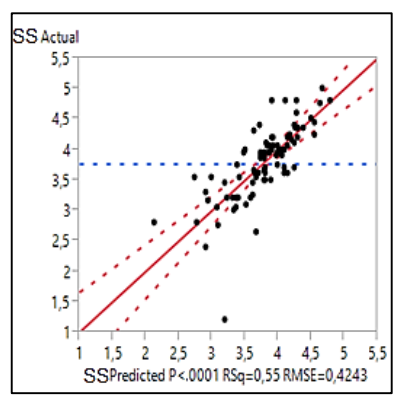


***Figure 9.*** *Standard regression of the residual for the dependent variable SS*

However, based on the results obtained above, we can continue with fiiting/adjusting this model. From the analysis can be removed the independent variable HRM, because its contribution to the equation is the smallest. So, we get a new (Figure 10) evaluation model.

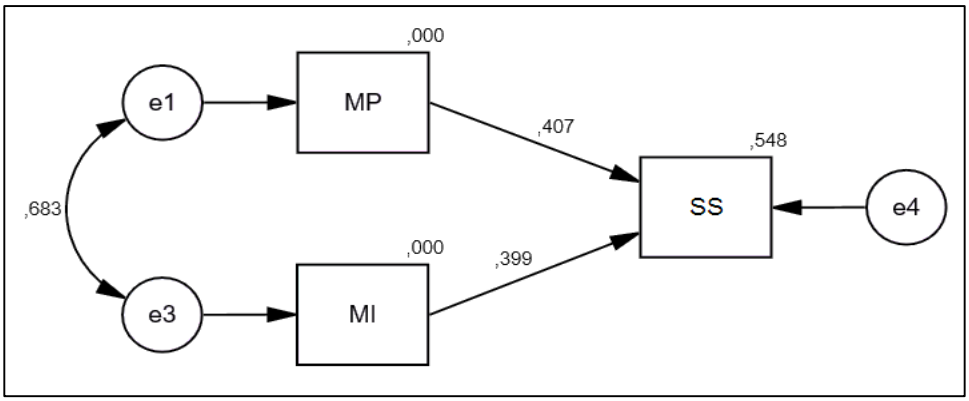


***Figure 10.*** *Adjusted evaluation model*

From (Figure 10) can be read value of determination coefficient which is R = 0.548, and it tells us what percentage of the variance of the dependent variable SS is explained in the presented model. This means that with 54.80% of the variability of the dependent variable SS can be explained by the influence of the independent variables MP and MI. The correlation coefficient is r = 0.740. Here variables are positively moderately correlated - related. The influence of independent variable MP is larger and amounts 0,407 compared to value of 0,399 which presents the impact of ndependant variable MI. The correlation coefficient between independent variables MP and MI is r = 0.683, which indicates that the independent variables are mutually moderately correlated - related.

Multiple regression equations can be compiled on the basis of the value of the (Figure 10), and it reads:

$$y_4 = 0{,}572 \cdot x_1 + 0{,}390 \cdot x_3 + 0{,}327$$

or

$$SS = 0{,}572 \cdot MP + 0{,}390 \cdot MI + 0{,}327$$

On Figure 11 is given diagram of regression of the standard residuals and it shows the values of the expected cumulative probability and observed cumulative probability. Here we see that there are no major deviations from normality, most of the value follows the line from the lower left to the upper right corner of the diagram.

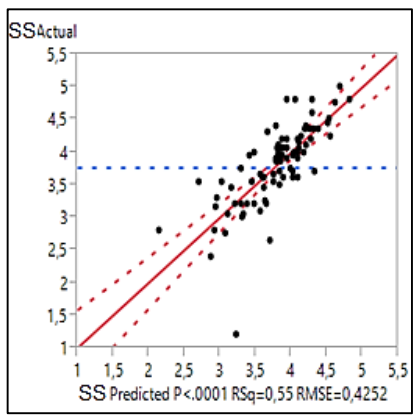


***Figure 11.*** *Standard regression of the residual for the dependent variable SS*

Based on the results we can confirm that processes management and innovation management significantly affect the sustainable success of business entities

## 5. CONCLUSION

Based on the analysis of the results obtained from the established model, adopted are conclusions that presented and developed models for the sustainable success of business entities are real and dynamic and can easily be applied and adjusted.

The expected results of this research are reflected through the established model for management: business processes, human resources and innovation based on the requirements of ISO 9004, which is designed for businesses regardless of their size, organizational status and other characteristics.

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