APPLICATION OF VRIO FRAMEWORK FOR ANALYZING HUMAN RESOURCES' ROLE IN PROVIDING COMPETITIVE ADVANTAGE*

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ABSTRACT

In modern economic theory, employees are treated as most significant resource and due to their attributes marked as human resources. Usually, significance of human resources has been explained through their role in creating sustainable competitive advantage. Successful realization of human resources role assumes fulfilment of conditions within so-called VRIO framework. VRIO framework means that human resources have the following characteristics: value, rarity, inimitability, and organization. If human resources are valuable they may provide competitive equality. If they are also rare, they may provide current competitive advantage. If they are hard to imitate, they may provide sustainable competitive advantage, but only within the context that supports their effective and efficient usage. This paper points out the significance of human resources for creating competitive advantage, viewed from VRIO framework elements and analyses the extent to which initiative for using human resources' potentials for competitiveness improvement is present in the companies in Serbia.

KEY WORDS

Human resources, VRIO framework, Value, Rarity, Inimitability.

1. INTRODUCTION

Resource based theory stands at the point that company's competitiveness is conditioned by its resources and capabilities, precisely by their combination. In this regard, it can be said that survival and growth may provide only those companies that identify, use and direct their resources and capabilities, continually searching for their optimal combination. Identifying the optimal combination involves the analysis of value chain, in terms of a set of related activities that create value for customers, as end-users of company's results. Although all resources are equally important for creating value for customers (since the lack or inadequate use of one resource jeopardizes the efficient usage of the other resources), human resources' importance has been especially pointed during the last few decades. The specificity of human resources, compared to other company's resources, is reflected in fact that they are the only "thinking" resource since they are characterized by attributes such as knowledge, abilities, experience, etc.

Also, new conditions, new technologies and new management methods require new abilities, knowledge, value judgments and norms of behaviour of employees. Therefore, the training programs and employee development, as well as relationships between employees, especially between superior and subordinates, become very significant. Continuous development of employees and changing their position in a company are the only proper answer to the changes in the environment, which are reflected through continuous improvement of technology, increasing number of competitors, and product obsolescence "overnight". Human resources, observed as employees with different abilities, are identified as one of the key company's resources. Due to the changes in the environment human resources may become insufficient or inadequate to maintain a competitive advantage, and for the company that does not realize this on time, even the key rigidity. Unfortunately, some employees may be resistant to changes. This is one reason why companies which were successful may become unsuccessful during time. In such circumstances, survival may provide companies that continuously create new knowledge, spread it throughout the company, and pour it into new processes and products. For this reason human resources management may be considered as very important factor of competitiveness.

2. THEORETICAL BACKGROUND: THE SIGNIFICANCE OF HUMAN RESOURCES FOR IMPROVING COMPETITIVENESS

Human resources significance was promoted in the work of Edit Penrose (Penrose 1959) who introduced resource-based theory of competitiveness. Some authors in human resources field argue that there is the link between human resource management and competitive advantage (Schuler 1986). Schuler specified that employees' behaviour was reflected in costs and quality of business processes (Schuler 1990). One of modern management gurus, Peter Drucker, in his papers, claims that competitiveness of companies and industries depends on productive use of knowledge and information (Drucker 1985), or on the acquisition and application of knowledge (Drucker 1993). Some other authors emphasize managers' role in human resources management issues. For pointing out the potential of human resources in terms of sources of competitive advantage, resource-based approach, promoted by Penrose, has been used by many authors. Wright, McMahan and Mc Williams (1994) have used this approach to examine how human resources can become a source of sustainable competitive advantage. Snell, Youndt and Wright (1996) attempted to integrate resource-based approach and the concept of organizational learning, and observed employees' knowledge and abilities as a source of competitiveness.

In the World Competitiveness Report of International Institute for Management Development (1995), are presented eight factors of competitiveness. The three of them directly or indirectly concern employees' knowledge and abilities, and indicate the importance of human resources management for gaining competitive advantage. It is about the following three factors of competitiveness: "(1) Managerial ability that provides long-term orientation to adapt to changes in the competitive environment; a level of entrepreneurship and skills for integration of business activities, (2) Capability for efficient and innovative application of existing technologies that bring competitive advantage. Investment in research and innovative activities for acquiring new knowledge, (3) A knowledge-based society and skilled labour force that increases a country's productivity and competitiveness." The influence of human capital to macro-economic competitiveness and economic growth is also pointed in the work of Krueger and Lindahl (2001).

The research of some authors indicates that the key to improving competitiveness in the observed economies lies in raising human resource knowledge and abilities by making appropriate investments in human capital through higher education and professional training that enhances their abilities (Yussof, Ismail 2002). Besides knowledge, social dimension of human resources makes them even more important than physical resources in dynamic environment (De la Fuente 2003). Some other researchers and managers in human resources field argue that the organizational unit (division, department) for human resources management is crucial for improving performances of the companies (Strandber 2009).

Though human resources management significance is pointed out in theory and confirmed in practice (Roche at al 2011, 38), in the most of Serbian companies, human resources are given relatively low importance level. For example, when it is necessary to reduce operating costs, the first thing managers usually do is the reduction of money for human resources, whether is about cutting wages, whether spending for employees' training and development. According to the results of the research presented in the Discussion section, Spending for employees' training and development, as a way for reducing operating costs, has got the highest rank (rank 1) by 92.5% of interviewed managers. In addition, 70% of interviewed managers have given the rank 2 for Wages cutting, as a way for reducing operating costs.

Although in practice of Serbian companies' managers often do not make a difference between human resources management and the organizational unit that deals with human resources or human resources department, this difference certainly exists. The importance of human resource department is significant, but usage of the potential of this intangible resource is largely conditioned by the existence of support from top management and motivation of employees to use this potential (knowledge and abilities) and to make it available for the company. When the director for strategic leadership in one of the most successful high-tech companies, as well as its founder and CEO, was asked how he sees the importance of human resources in his company, he replied: "What do you think? If you think about human resource department, which we call the "big HR", we do not attach great significance. But if you think about the employees, in general, which we call "small HR", we give them the greatest possible importance" (Kamoche 1996). This means that managers at all levels and in all organizational units must take care of their employees, but also that the employees need to develop mutual relations of cooperation and respect. If top managers publicly express their commitment to human resources, and those employed in human resource department have a responsibility to manage this valuable resource, it is more likely to provide effective and efficient use of human resources.

Research and quantitative analysis of the relationship between human resources and competitive advantage are rare in the literature concerning the resource-based theory. One of the researches on this topic relates to the penetration to the foreign markets or company's internationalization. Based on conducted research, Hitt and his co-authors (Hitt 2006) concluded that companies' penetration to foreign markets cannot be achieved without high-quality human resources, since they represent the most important source of competitive advantage.

Human resources contribution to the improvement of company's competitive position depends on their characteristics, and more specifically, depends on how well they perform their role. This estimation can be made by using VRIO framework, developed by Barney (Barney 2001). Application of VRIO framework should provide an answer to the question: Whether the company's resources, including human resources, can be considered as a strength or weakness? The title of this framework is an acronym composed of the first letters of its elements' names, namely (Barney, Wright 2009):

- Value - is the resource valuable in terms of neutralizing the threats and exploiting the opportunities from the environment,
- Rarity - is the resource rarely present among existing and potential competitors,
- Inimitability - is the resource expensive or impossible to imitate,
- Organization - is the resource used by the company, or is the company organized in a way that allows efficient usage of the resource?

If the management cannot recognize these features in the company's human resources, it cannot be said that it has the potential for building or improving competitive advantage based on human resources. On the contrary, human resources that are characterized by VRIO framework elements can be considered as high-quality human resources, which can provide sustainable competitive advantage.

3. METHODOLOGY: THE ANALYSIS OF HUMAN RESOURCES BASED ON VRIO FRAMEWORK

Analysis of the importance of human resources for providing competitive advantage is based on the analysis of role of their knowledge, abilities and commitment and relationships between employees. In this sense, one way to highlight the importance of human resources is exactly application of VRIO framework.

In order to analyze human resources' role and treatment in the companies in Serbia, the research has been conducted. The objective of the research is to identify how much attention is given to human resources, as carriers of competitive advantage, and consequently to formulate recommendations for managers of Serbian companies, especially for human resources managers.

The main hypothesis of the research is that inadequate treatment of human resources is the reason of competitiveness gap of Serbian companies. The supporting hypothesis is that there is no compliance between VRIO framework elements' presence in Serbian companies, or that VRIO framework elements do not have equal treatment in the companies. Another supporting hypothesis is that very small number of companies in Serbia operates in VRIO environment.

Therefore, the task of the research is to assess the quality of human resources in the companies in Serbia, in terms of VRIO framework elements, from the perspective of managers (CEOs). The research of VRIO framework implementation in Serbian economy included 120 companies from Serbia. These companies were randomly selected. The sampling procedure was not limited to one or few branches of industry, which means that the population was Serbian economy, as a whole. The respondents were managers of human resources department and general managers for the companies that do not have organizational unit for human resources management in the organizational structure. This kind of sample may not be concerned as statistically significant, but certainly as informative for gaining insight into the relationship between VRIO framework elements and companies competitiveness, measured as profit per employee.

Human resources value. Human resources development is essential, as it must be in accordance with the changes that occur in the environment (development of technology, changes in customers' preferences, and fluidity of boundaries between industries). Human resources may be considered valuable if they enable the elimination of threats from the environment and use opportunities that arise, on one hand, or use the other resources in an efficient manner, on the other hand. Specifically, if the human resources make the company efficient, consumer-oriented and focused on innovation and quality they can be considered valuable. Human resource managers must be able to realize current, as well as future core competencies of the company, the need for appropriate profiles of employees, the state of competition, and plan the activities related to human resources needed by the company now and in the future (Barney, Wright 2009). Value, as human resources characteristic, is explained through the following assertions:
    Assertion 1.1: The existing structure of employees, in sense of their competitiveness, corresponds to the tasks, which should be performed,
    Assertion 1.2: Number of employees corresponds to the amount of work, which should be performed,
    Assertion 1.3: Employees have knowledge and abilities for performing key business processes,
    Assertion 1.4: The ratio between employees engaged in key processes and employees engaged in supporting processes is in favour of the first group.

Human resources rarity. Value of human resources is necessary, but not sufficient condition for gaining competitive advantage. If human resources in the companies that are competitors have the same characteristics, then these features cannot form the basis for competitive advantage for any company. Valuable, but common characteristics allow the company only equal position compared to competitors. If the resource is not rare it cannot ensure the achievement above the average profits. Therefore the company has to develop and exploit those rare, special characteristics of employees in order to gain competitive advantage. The issue of resources' rarity refers to how many

competing companies (direct and indirect competitors) have the knowledge and abilities that characterize the employees of specific company. In modern conditions rarity, as employees' characteristic, is mostly associated with the companies that innovate frequently and are pioneers in their industry. The central place in terms of rarity covers the process of developing and spreading the so-called tacit (hidden) knowledge through the company (Laursen, Foss 2003). This knowledge is based on the experience and specific relationships between the employees in the company, The analysis of human resources rarity is based on the following assertions:

   Assertion 2.1: The rarity of knowledge and abilities of employees is considered during their recruitment,
   Assertion 2.2: The employees have specifics knowledge and abilities,
   Assertion 2.3: The employees' creativity and innovations have been encouraged,
   Assertion 2.4: The companies invest in development of rare knowledge and abilities of employees.

Human resources inimitability. The issue of imitation is a logical extension to the previous element – human resources rarity. If the acquisition or development of certain human resources involves high costs or if there is no or negligible possibility for imitation, resources will retain their "rarity". Valuable and rare employees' features provide opportunity for the company to achieve above average profitability in the short term. However, if competitors can imitate the characteristics of employees in order to gain competitive advantage, then this will, over time, be a basis for competitive equality, but not for competitive advantage. Inimitability is the element of VRIO framework which is most difficult to examine and analyze, given that with enough time and money almost every resource can be the object of imitation. For this reason, for the analysis of this element it is desirable to estimate how long it takes the competitors to provide a copy of the resource. In the context of difficulty to imitate resources, Barney and Hesterly (Barney, Hesterly 2010) divide resources into two groups: tangible and intangible. In principle, the intangible resources are more difficult to imitate. For example, business culture, as company's "personality" includes values, attitudes and behaviour, relationships between employees, cooperation and the like. Company's personality is built by its employees, who thus, provide a kind of seal to the company, which is very difficult to imitate. Inimitability, as human resources characteristic, can be explained through the following assertions:

   Assertion 3.1: Knowledge and abilities that employees possess can be hardly imitated,
   Assertion 3.2: Knowledge that employees possess is unavailable or difficult to obtain, due to the small number of people who possess it,
   Assertion 3.3: Knowledge of employees is hardly transferable (in terms of simplicity of obtaining or learning),
   Assertion 3.4: The costs of acquiring valuable knowledge and abilities are high, and in that sense, these attributes of employees are unattainable.

Organization (organizational support). Mentioned characteristics of human resources could become a source of competitive advantage if a company is well organized. The organization in this sense means the establishment of procedures and systems that enable fully utilization of human resources potential. For this purpose, company establishes certain mechanisms, which must be focused on developing knowledge and abilities of employees and the incentives that will encourage their exploitation. Companies must be organized in a way that encourages employees for effective and efficient usage of other resources, which means continuous improvement of their knowledge and abilities. Informal communication (other than formal), empowerment, transparent strategy and corporate objectives, reporting on the results, an appreciation of ideas, and rewards contribute significantly to employees' motivation and commitment, which is the key condition for using knowledge and abilities in function of value creation (Yukl, Becker 2006). The company that has the best system of selection, the best training program for employees, the best reward system, etc., will have an advantage over its competitors. However, each activity can be relatively easy imitated and as such it can only be a temporary basis for competitive advantage. The real challenge is to develop human resources management system that allows the harmonious conducting of all activities of human resource management, because they then become a valuable and rare resource,

extremely to imitate by competitors. The analysis of organization for human resources management is based on the following assertions:

Assertion 4.1: Knowledge and abilities of employees are complementary with other resources,

Assertion 4.2: Employees are empowered according to their knowledge and abilities,

Assertion 4.3: Compensation system is structured in such a way that it motivates employees to use their knowledge and abilities,

Assertion 4.4: Cooperation and communication between employees at all hierarchical levels and between hierarchical levels is encouraged.

Analysis of the data collected is focused on examining the presence of certain elements of framework VRIO in the companies from the sample. As it is already shown, for each element four assertions have been formulated (Self at al 2012) whose aim is to depict the situation in the Serbian economy, in terms of human resource management.

These assertions have been evaluated by managers, according to their subjective opinion. They evaluated each assertion by marks from 1 to 5, where 1 means that managers completely do not agree with the assertion and 5 that they absolutely agree with the assertion. These marks actually represent the levels of agreement with the assertions. The fourth assertion in the first group of questions (Assertion 1.4) assumes transformation of percentages into marks in the following way: 1 – up to 20% of employees engaged in the key processes; 2 – from 21 to 40%; 3 – from 41 to 60%; 4 – from 61 to 80%; 5 – from 81 to 100%.

Analysis of the data collected is based on certain statistical tools. In order to provide relevant information for decision-making concerning presented hypotheses, as the most appropriate tools have been chosen: descriptive statistics, Chi-square test, correlation analysis, ANOVA analysis and cluster analysis.

4. DISCUSSION: THE ANALYSIS OF THE RESEARCH RESULTS CONCERNING VRIO FRAMEWORK APPLICATION IN THE SERBIAN COMPANIES

Leadership position may provide only human resources that are valuable, rare and difficult to imitate. Serbian companies cannot boast with competitiveness, neither at domestic market, nor at the global market. This was a primary motive for conducting the research, which results are presented below.

When it is about the first group of questions, concerning human resources value, descriptive statistics (Table 1) has shown that state in Serbian companies is at surprisingly high level (compared to authors' expectations).

Table 1: Descriptive statistics for human resources value

	N	Minimum	Maximum	Mean	Std. Deviation
Assertion 1.1	120	3.00	5.00	4.6500	.53349
Assertion 1.2	120	3.00	5.00	4.3250	.79703
Assertion 1.3	120	3.00	5.00	4.5250	.78406
Assertion 1.4	120	1.00	5.00	3.3250	1.22762

According to the results of descriptive statistics, there is great correspondence between present structure of employees and the tasks that should be performed (average score is 4.65). Also, managers highly valued knowledge and abilities of employees (average score 4.525). In the last few years (during the privatisation process) number of employees is adjusted to the amount of work. This confirms the average mark for the compliance of number of employees with the workload, which is 4.325. In the first group of questions, the only weak point in Serbian companies is the percentage of employees engaged in the implementation of key processes, which is 61.6%, and which can be considered as low percentage.

Rarity of human resources is an important factor of competitiveness. Analysis results suggest that one factor of the lack of competitiveness of Serbian companies is insufficient investment in the development of rare human resources, or the lack of attention that has to be given to this element of VRIO framework (Table 2).

Table 2: Descriptive statistics for human resources rarity

	N	Minimum	Maximum	Mean	Std. Deviation
Assertion 2.1	120	2.00	5.00	3.8000	1.03388
Assertion 2.2	120	1.00	5.00	2.4250	1.36377
Assertion 2.3	120	1.00	5.00	2.3750	1.36007
Assertion 2.4	120	2.00	5.00	2.8000	1.03388

Managers pointed that they consider the rarity of knowledge and abilities during the recruitment of employees (average score was 3.8). However, when it comes to investing in development of rare knowledge and abilities of employees, the average mark is only 2.8. This shows that the managers in Serbia are aware of the importance of rare knowledge and abilities of employees, but are not willing to invest in their further development (after the employment), which in dynamic terms, usually means that companies' benefit from rarity will disappear. This conclusion is confirmed by further analysis of the rarity of human resources and investment in their development, carried out by using χ^2 test. The results of χ^2 test indicate that the level of significance is 0.00 (less than 0.05), which means that between the rarity of human knowledge and abilities and investment in the development of rare knowledge and abilities of employees there is significant level of correlation.

When it is about human resources inimitability, descriptive statistics has shown the inconsistency of the results (Table 3).

Table 3: Descriptive statistics for human resources inimitability

	N	Minimum	Maximum	Mean	Std. Deviation
Assertion 3.1	120	4.00	5.00	4.5000	.50637
Assertion 3.2	120	2.00	5.00	2.9500	.78283
Assertion 3.3	120	3.00	5.00	3.7000	.64847
Assertion 3.4	120	3.00	5.00	4.3000	.79097

The inimitability of human resources managers have evaluated as very high (average score 4.5), which means that they believe that the knowledge and abilities of their employees is hard copy. However, bearing in mind the evaluation results of other issues, it can be concluded that the inimitability of human resources is evaluated in relation to the high cost of acquiring valuable knowledge and abilities (mean score 4.3), rather than in relation to the number of employees who posses them (2.95). With this in mind, evaluation of human resources inimitability in Serbian companies has to be taken with caution.

The fourth group of questions relates to the organizational support of human resources so that their characteristics in terms of value, rarity and inimitability are put in function of company's goals achievement (Table 4).

Table 4: Descriptive statistics for human resources organizational support

	N	Minimum	Maximum	Mean	Std. Deviation
Assertion 4.1	120	3.00	5.00	3.8500	.92126
Assertion 4.2	120	4.00	5.00	4.2000	.40510
Assertion 4.3	120	3.00	5.00	3.9000	1.00766
Assertion 4.4	120	3.00	5.00	4.2250	.47972

Managers in Serbia believe that knowledge and abilities of employees are not enough complementary with other resources (average score 3.85). Managers' answers to issues related to supporting the effective and efficient use of human resources also indicate relatively satisfactory state: managers believe that employees are empowered according to their knowledge and abilities (average mark 4.2), and that cooperation and communication between employees at all hierarchical levels and between hierarchical levels is encouraged (average mark 4.225). Slightly lower rating occurs when it comes to compensation systems in the sense that it motivates employees to put their knowledge and abilities in function of improving competitiveness of the companies (the average score is 3.9), which suggests that managers believe that compensation system could be improved.

Bearing in mind the ease of obtaining information, profit per employee has been used as a measure of companies' competitiveness. In order to confirm or reject the main hypothesis, rank correlation has been applied. The companies in the sample have been ranked according to two criteria: the first one has been the average mark for previously mentioned sixteen assertions, concerning VRIO framework, and the second has been profit per employees. Spearman's rank correlation coefficient for those two variables is equal 0.782. Concerning the fact that this coefficient varies between -1 and 1, it may be said that between profit per employee and average mark of VRIO framework elements there is high positive correlation, which is statistically significant (p=0.000).

Based on managers' evaluation of VRIO framework elements in terms of human resources, one can notice certain inconsistency or discrepancy of managers. This means that there is unequal treatment of certain elements of VRIO framework in the companies in Serbia. This conclusion can be supported by correlation analysis (Table 5). Correlation analysis concerning four elements of VRIO framework is based on average marks for the assertions from each group.

Table 5: Correlation analysis results

		Value	Rarity	Inimitability	Organization
Value	Spearman's Correlation Coefficient	1.000			
	Sig. (2-tailed)	.			
	N	120			
Rarity	Spearman's Correlation Coefficient	**.300**	1.000		
	Sig. (2-tailed)	.001	.		
	N	120	120		
Inimitability	Spearman's Correlation Coefficient	**.086**	**-.076**	1.000	
	Sig. (2-tailed)	.352	.412	.	
	N	120	120	120	
Organization	Spearman's Correlation Coefficient	**.064**	**.138**	**.228**	1.000
	Sig. (2-tailed)	.487	.133	.012	.
	N	120	120	120	120

The results of correlation analysis confirm discrepancies between four elements of VRIO framework. Discrepancy may be observed from the value of Spearman's correlation coefficient, which is extremely low or even negative for all pared variables (assertions). Besides Spearman's coefficient, the discrepancy between VRIO framework elements can be confirmed through ANOVA results. First, the average mark is determined for each VRIO framework element (Table 6). After that, ANOVA testing is performed based on these average marks. ANOVA results have shown that there is statistically significant difference between the average marks of VRIO framework elements (Table 7).

**Table 6: Descriptive statistics for VRIO framework elements
(Average for all four assertions' marks)**

	N	Mean	Std. Deviation	Std. Error
Value	120	4.2063	.45219	.04128
Rarity	120	2.8500	.66136	.06037
Inimitability	120	3.8625	.28596	.02610
Organization	120	4.0438	.47264	.04315

Precisely, according to ANOVA results, significance level is 0.000, which is lower than 0.05. This means that there is statistically significant difference between the average marks of four elements of VRIO framework or that managers do not pay equal attention to VRIO framework elements.

Table 7: ANOVA results

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	134.011	3	44.670	188.675	.000
Within Groups	112.697	476	.237		
Total	246.708	479			

Based on the information from the questionnaire, 16 variables are defined and used for classification of 120 companies in two clusters - one cluster includes companies operating in VRIO environment, and the other companies that do not work in this environment. There are numerous methods for grouping objects into clusters. The basic classification assumes two groups: hierarchical and non-hierarchical clustering methods (Cornish 2007). K-means cluster analysis, which is used in this research, belongs to the non-hierarchical clustering methods. Unlike hierarchical cluster analysis, which results in successive connection of objects into larger clusters, K-means method is characterized by only one solution for the predetermined number of clusters (two in this case). Results of cluster analysis are shown in Table 8. From these results it is clear that there is a great discrepancy in the number of companies that have implemented VRIO concept and those that still have not implemented it.

Table 8: Classification of the companies in two clusters

Clusters	The number of the companies in the sample
Cluster 1	42
Cluster 2	78

Cluster 1 consists of the companies for which can be said that they know and, fully or partially, have been implemented VRIO framework. Unfortunately, these companies represent only 35% of total number of companies in the sample. Most of the companies belong to Cluster 2, or they are in the group that is not familiar with the VRIO framework.

Application of K-means cluster analysis in SPSS (Statistical Package for the Social Sciences) includes the special algorithm which classifies objects into nearest cluster. Algorithm for this form of cluster analysis is method of nearest centred sorting (Anderberg 1973). The cluster centre is the mean of all variables, calculated on the basis of all units that form the cluster. After the association all of new units, it is possible to recalculate the cluster centres. These centres are called final cluster centres. According to values of final cluster centres (Table 9), the average marks in Cluster 1 are higher compared to Cluster 2. The difference in average marks between clusters is especially evident for questions relating to the organizational support of human resources in the companies.

Table 9: Final Cluster Centres

Variables	Cluster 1	Cluster 2
Assertion 1.1	4.63	4.66
Assertion 1.2	4.35	4.31
Assertion 1.3	4.63	4.43
Assertion 1.4	4.10	3.83
Assertion 2.1	4.18	3.99
Assertion 2.2	3.08	2.75
Assertion 2.3	4.05	1.54
Assertion 2.4	2.90	2.78
Assertion 3.1	4.58	4.53
Assertion 3.2	2.98	3.00
Assertion 3.3	3.63	3.74
Assertion 3.4	4.55	4.10
Assertion 4.1	4.50	3.73
Assertion 4.2	4.35	4.04
Assertion 4.3	4.45	3.79
Assertion 4.4	4.35	4.26

5. CONCLUSIONS

VRIO framework facilitates managers to evaluate of all activities undertaken within the human resource department, according to the criteria value, rarity, possibility of imitation and the organization. The ultimate goal is to ensure the structure of human resources that contributes to creation of value which other companies do not have and which cannot be that easy imitated. If a company is efficient, innovative, and customer-oriented and focused on quality improvement it is on track to provide a sustainable competitive advantage.

The results of descriptive statistics, ANOVA and χ^2 test have confirmed the research hypotheses. Precisely, according to the rank correlation there is positive correlation between profit per employee and average mark for VRIO framework assertions. This does not mean that VRIO framework implementation and adequate treatment of human resources is the only reason of the competitiveness gap of Serbian companies. However, by using the method of abstraction and neglecting the other factors of competitiveness, it may be concluded that presence of VRIO framework elements in human resources management does influence companies' competitiveness.

Furthermore, the results have shown that human resources' role in providing competitive advantage in Serbian companies is underestimated or that employees are not treated in a way that provokes their commitment and involvement in process of business quality improvement. Also, the research results indicate insufficient care about human resources rarity and inimitability.

Cluster analysis suggests that only a small number of Serbian companies have been operating in VRIO environment. Some of the reasons for this situation certainly are: the lack of employee involvement in decision-making, one-sided flow of information between supervisors and subordinates (in the sense that managers just give orders and instructions, and their subordinates the reports on the results of the work), insufficient funds for the development of specific knowledge and abilities of employees (in terms of training and development), failure to promote team work, etc.

It seems that in Serbia the importance of human resources is still not recognized and understood. Qualitative data collected through the interviews with managers, show inability or indifference of managers to evaluate and compare the costs in form of salaries, on one hand, and effects, whether in form of income or savings which employees provide for the company, on the other hand. Mainly as an excuse may be heard comments that the company already operates on the edge of profitability, and that the additional costs in form of salaries for new employees or in form of variable part of salaries for existing employees will make the position of the company even more difficult. Changing this attitude requires a change of business culture, and culture of the whole society, in a way that it supports creativity, innovation and expertise, and not only supports but also motivates.

Concerning the research results, it can be concluded that human resources management in the companies in Serbia is not in a systematic, comprehensive nor holistic. This, consequently, leads to the conclusion that human resources in the companies in Serbia are factors of competitiveness gap, and not of competitiveness advantage.

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