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THE IMPORTANCE OF INFORMATION TECHNOLOGIES FOR AUTOMOTIVE CLUSTER OF THE REPUBLIC OF SERBIA

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Abstract. *Enterprise networking occurs as a consequence of the globalization and the tendency to increase the ability to meet customer requirements. The functioning of networked enterprises as complex interorganizational networks in modern conditions is impossible without the implementation of appropriate information technology (IT). They provide stronger partnerships, fast and easier sharing of information, more transparency and less distorted information. The importance of the application of IT will be highlighted through the advantages of IT, as well as factors that may limit the process of their application. The analysis was conducted based on a sample of 28 enterprises which are the cluster members. The general conclusion based of the analysis is that there is a link among IT implementation and achievement of positive effects in certain business segments (Sharing information, Supply reliability, Inventory reduction, Cost reduction, Fast delivery, Product quality, Process continuity), which means that enterprises that have implemented IT generate positive effects in the observed fields. The analysis was performed by application of the following statistical tools: descriptive statistics, Fisher's exact probability test, correlation analysis and cluster analysis.*

Key Words: *enterprise networking, information technology, automotive cluster, correlation analysis, cluster analysis.*

INTRODUCTION

Modern competition is imposed by the need to achieve competitive advantage through interorganizational networking. The impossibility of providing all the necessary resources, capabilities and skills in modern conditions, accelerates the development of interorganizational networks. At the same time, a large number of different networked enterprises has influenced the emergence of conflicts among competing objectives and strategies of the partners. The basic requirement for achieving effective partnership is

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teamwork. However, it is impossible to achieve this without the cooperation, coordination and collaboration among partners, the behavior known as C3 behavior (Weaver, Visich and Roethlein, 2012). C3 behavior is inevitable in the case of improvement of processes, structure, and skills at the level of interorganizational network. This behavior means that partners imply joint efforts in order to achieve common goals. C3 behavior enables the realization of creative and innovative solutions necessary to create new values, products or processes, as well as intangible value.

Many authors point out that for achieving high level of collaboration within the network it is necessary to provide interdependence among partners, long-term orientation and sharing information (Pigni, Ravarino, Saglietti, 2010). In order to provide improvements in interorganizational network, the aforementioned information sharing among partners must include sharing of strategic information, and not just transactional data (Krishnapriya, Rupashree, 2014). Therefore, the possibility of achieving cooperation, coordination and collaboration among partners is limited by the lack of IT implementation. Through sharing information among partners, different ITs increase the level of transparency within network, but at the same time ensure the creation of greater value for the consumer, through the elimination of conflicts, which proceed from sharing incorrect or distorted information. In this sense, IT, both at the level of individual enterprises, and the level of interorganizational networks, is considered as one of the sources of competitive advantage.

1. APPLICATION OF INFORMATION TECHNOLOGIES WITHIN INTERORGANIZATIONAL NETWORK

Information and communication technologies are an important support for the development and functioning of interorganizational networks. IT provides opportunities for enterprises to achieve full integration with their partners within the network, at relatively low cost (Baihaqi, Beaumont, Sohal, 2008). *Gerard* and *Marshall* in their study analyzed the contribution of IT and information exchange on demand between a supplier and a large number of retailers. These authors found that sharing information has led to costs reduction by 13.8%, within the network (Zhang, 2008).

Before the introduction of IT, sharing information, both among functional areas within enterprises and among the enterprises within the network, included the paper form. This way for sharing information was slow, unreliable and full of errors (Moharana, Murty, Senapati, Khuntia, 2011). In the mid-1970s first serious technical solutions appeared, and they supported the efficient functioning of supply system, such as Kanban system, the original version of Just-in-Time system delivering spare parts for Toyota from Japan to America for final processing. Almost simultaneously appeared the first control concepts on the procurement such as Material Requirements Planning - MRP I, Manufacturing Resource Planning - MRP II, Distribution Resource Planning - DRP and Enterprise Resource Planning - ERP. The appearance of these technologies enabled effective communication among partners across national borders, regardless of the distance (Higuchi, Troutt and Polin, 2005).

Increasing speed and reducing cost of communication are some of the main drives for the development of interorganizational networks. A major contribution represents facilitating personal and business contacts. The development possibilities of electronic processing and transmission of data, voice, letters, pictures and so on gave a huge contribution to reducing the cost of communication. A similar revolution, in the context of transport technologies, has enabled the achievement of significant effects, through fast and cheaper transport of goods (Đogić, Čengić, 2008).

In spite of the fact that the Internet appeared much later than the concept of interorganizational networks, the Internet has accelerated its development significantly. The Internet has affected easier design and implementation of business activity in networks. It facilitates and accelerates sharing information in real time. It speeds up and simplifies the process of market research. These are some of the reasons that contributed to Porter's claim that the Internet is the most powerful tool available to enhance operational efficiency (Milovanovic, 2004, 82).

However, there are technologies whose appearance and development was initiated by the need to establish better communication and coordination in interorganizational networks. Some of them are: Vendor-Managed Inventory - VMI, Collaborative Planning, Forecasting and Replenishment - CPFR, Continuous Replenishment Program - CRP. The above mentioned technologies can be classified into several categories, depending on whether they are applied within an organization or among several organizations and whether they are used in planning or executive actions.

Table 1 ITs which have contributed to development networks considering their field of application

Field of application IT	Technologies which are used in planning	Technologies which are used in executive activities
Inter-organizational technologies	CPFR	EDI (Electronic Data Interchange) VMI (Vendor Managed Inventory)
Intra-organizational technologies	MRP I MRP II ERP	WMS (Warehouse Management System)

Source: Mangan, J., Lalwani, Ch. and Butcher, T., (2008), *Global Logistics and Supply Chain Management*, John Wiley & Sons, Ltd, New York.

One of the modern technologies has found its application in interorganizational networks. It is a Radio Frequency Identification - RFID. RFID technology contributes to improving the efficiency of interorganizational networks. Application of this technology has provided real-time information and transparency among all partners in interogranization networks (Jones, Chung, 2008, 119). Data in real time, which are transmitted via radio waves, provide to participants in the supply chain current information on inventory and logistics (Barac, Milovanovic, Andjelkovic, 2009, 121). RFID technology contributes to continual sharing of information throughout the network, thus ensuring coordination among all partners (Barac, Milovanovic, Andjelkovic, 2009, 12). Problems in supply chain caused by poor coordination, can be overcome by using RFID chips in all members of the chain. The *bullwhip effect* can be explained as a result of insufficient or missing communication among supply chain parthers, and it can be avoided by introducing these chips.

2. CLUSTERS AS A FORM OF INTERORGANIZATIONAL NETWORKING

Clusters are a type of inter-organizational networks, which involve linked enterprises from similar business sectors, and are initiated by common interests for increasing competitive advantage and market position, through sharing knowledge, skills, experience, resources

and activities (Porter, 1998). By networking enterprises through clusters the synergistic effect at the level of individual enterprises, as well as at the level of the network is achieved due to the great interdependence of all the members, quick implementation of technological, marketing and managerial skills, etc (Ilić, 2006). These inter-organisational networks, incurred by connecting material as well as immaterial resources, provide competitiveness not only at the local, national and regional level, but also in the global environment, for the enterprises involved. By entering the cluster, enterprises increase their competitiveness through increasing productivity and innovation based on networking. Networking through clusters provides for the enterprises' increase of their capabilities, resources, capacities, etc., without loss of expertise and control of business, as well as independence in performing certain activities. Within the cluster there are many different partners, such as manufacturers, suppliers, retailers, service enterprises, but also educational and scientific institutions, agencies or associations, which represent some kind of supporting institutions (Petković, Aleksić Mirić, Petrović, 2011).

A number of authors have pointed out the dual importance of enterprises networking through clusters, in terms of increased competitive advantage at the level of industry, around which enterprises are networked, as well as at the level of individual enterprises, which are parts of cluster. Ever more this kind of networking is the only way for survival of small and medium-sized enterprises, which are characterized by limitations in terms of lack of financial resources, experience, skills and material resources. Some advantages of networking through clusters are (Rapić, 2010, 154):

- Easier access to the latest knowledge and research capacities,
- Existence of a framework for cooperation,
- Reliance on existing organizational infrastructure,
- Efficient access to raw materials, specialized workforce and suppliers,
- Access to IT database in a particular area,
- Easier application of new technologies,
- Existence of competition within the cluster, thus strengthening the international competitiveness,
- Access to government programs for development of clusters, i.e. The possibility of subsidies and tax incentives,
- Achieving economies of scale and
- Joint marketing mechanism (joint participation in international fairs).

Often mentioned elements as a base of realization of competitive advantages are: ideas, knowledge, information, efficiency, inventiveness and innovation, quality products and services, lower operating costs, differentiation of products and services compared to competitors, flexibility, agility, velocity in satisfying market demand, etc (Ilić, 2006). Clusters are structured in a manner that provides establishing cooperation and undisturbed sharing of information among partners. Enterprises networked through clusters by learning, sharing knowledge, experiences, information and innovation are able to overcome problems that arise in the process of carrying out the activities (Rapić, 2010).

These innovations that arise as a result of the developed knowledge, interconnections and relationships, represent a competitive advantage of clusters, as shown in Figure 1. Previous studies have shown that networking through clusters has increasing importance and role in the growth and development of enterprises, with the emphasis that in some cases these inter-organizational networks provide greater benefits for small and medium-sized rather than for large enterprises.

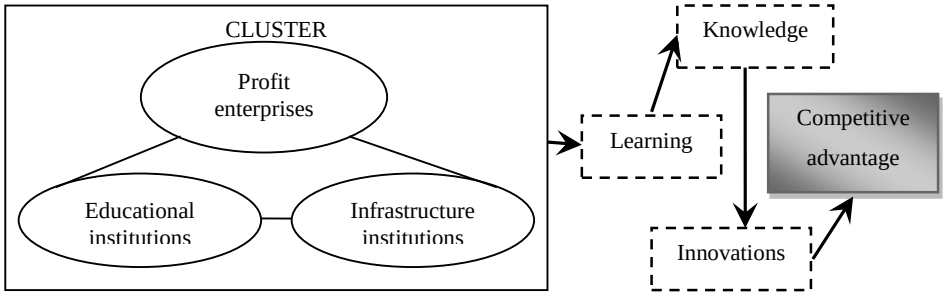

Fig. 1 Achieving competitive advantage through cluster
(Konkurentnost privrede Srbije, 2003, 305)

In addition to the aforementioned benefits, there is one more, frequently mentioned, and it is reflected in the cluster's role as a source of information. However, achieving all these benefits of inter-organisational networking through clusters is limited by the lack of adequate IT to provide sharing of information among both, partners within the cluster, and beyond it. IT enables the undisturbed information flow, timely and accurate, or sharing of information in order to facilitate the rapid adjustment of associated partners to market demands while minimizing costs. In this regard, the clusters are imposed by the requirements regarding the introduction of IT, which will ensure easier performing of activities within these complex networks (Ilić, Stojanović, 2009).

The use of IT and communication solutions in open economies contributes to linking two or more economies of the region within a country or more regions from a number of countries (Ilić, 2006). This statement proves that the IT provides a higher level of communication and cooperation within the cluster, but also may provide a higher level of collaboration with partners from other regions or even other countries.

3. Application of Information Technologies within the Automotive Cluster in the Republic of Serbia

On the territory of the Republic of Serbia there are more than 50 clusters. In order to analyze the importance of IT for the need of interorganization networking in the form of clusters, the authors have chosen the automotive cluster of the Republic of Serbia. The choice of this cluster is justified by the fact that the automotive industry is one of the most complex, given the number of participants and suppliers of various parts, and there is certainly the need to establish coordination and sharing of information. Clusters from the mentioned area have a large number of partners that base their processes on lean principles, and the principles of the *Just-in-Time* and *Just-in-Sequence*, which is impossible to achieve without the implementation of appropriate IT (Thun, Printing & Hoenig, 2011, 5511). At the moment when the empirical research was conducted the automotive cluster of the Republic of Serbia had 43 enterprises. In order to carry out empirical research, a structured questionnaire was used. Data were collected by sending questionnaires to email addresses of the owner or manager of enterprises that are part of the automotive cluster. Respondents participating in the survey answered questions related to the use of IT, the benefits of their implementation, as well as the reasons why until today the enterprise has not launched implementaion IT.

Concerning the way managers answered the questions, due to the fact that the sample was small, for the evaluation of the effects it was needed, instead of the classical evaluation of Likert scale, that managers add the dichotomous responses, too (whether the effect exists or not). Due to that, a more detailed statistical analysis and application of certain tools, which will be particularly highlighted and explained in our futher reseach, was possible. Of all the enterprises that were found in the sample (28), 12 belong to the group that implements some of the IT, or about 43%. The sample included 7 large and 21 small (and medium) enterprises (Figure 2). The same structure of the sample exists when it is about distribution of enterprises according to the origin of the majority of capital, in favor of enterprises with greater domestic capital.

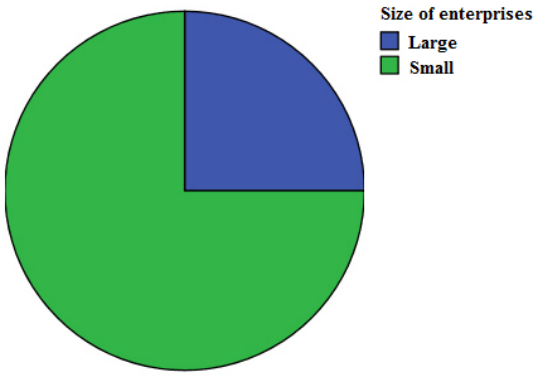

Fig. 2 The structure of enterprises in the sample by size

The structure of the sample depending on the implementation of IT and enterprise size is shown in Table 2. The table displays absolute and proportional participation.

Table 2 Crosstabulation: Enterprises by size and IT implementation

			Enterprise size		Total
			Large	Small	
IT	Applied	Count	4	8	12
		% within IT	33.3%	66.7%	100.0%
		% within Cluster Number of Case	57.1%	38.1%	42.9%
	Not applied	Count	3	13	16
		% within IT	18.8%	81.3%	100.0%
		% within Cluster Number of Case	42.9%	61.9%	57.1%
Total		Count	7	21	28
		% within IT	25.0%	75.0%	100.0%
		% within Cluster Number of Case	100.0%	100.0%	100.0%

In order to determine whether there is a connection or relationship between IT applications and the size of the enterprises it is necessary to apply the χ^2 test. However, χ^2 test is limited with the fact that frequencies have to be at least equal to 5 (which is not the case in this study). This has causes the application of the Fisher's exact probability test of the null hypothesis. This test is performed exclusively at the table contingency 2 × 2,

when the value of symbols can be displayed dichotomous, (in this case: applied IT – not applied IT, and enterprise size: large - small or are not large). In this case, the null hypothesis can be formulated as: "*There is no correlation between the size of the enterprise and the implementation of IT",* and as an alternative: *„There is a correlation between the size of the enterprise and the implementation of IT".* The results of Fisher's exact test showed that the significance level is 0.328, which is greater than 0.01, and means that the null hypothesis should not be rejected, or that between the observed variables there is no dependency.

The structure of the sample depending on the implementation of IT and the origin of the majority of capital is shown in Table 3. The table shows absolute and proportional participation, as in the previous case.

Table 3 Crosstabulation: Enterprises by capital origin and IT implementation

			Origin of capital		Total
			Large	Small	
IT	Applied	Count	6	6	12
		% within IT	50.0%	50.0%	100.0%
		% within Cluster Number of Case	85.7%	28.6%	42.9%
	Not applied	Count	1	15	16
		% within IT	6.3%	93.8%	100.0%
		% within Cluster Number of Case	14.3%	71.4%	57.1%
Total		Count	7	21	28
		% within IT	25.0%	75.0%	100.0%
		% within Cluster Number of Case	100.0%	100.0%	100.0%

When it comes to the relationship between these two variables, the same method as in the previous case has been used. The null hypothesis is formulated as: *"There is no correlation between the origin of the majority of capital and the implementation of IT*", and the alternative as: *"There is a correlation between the origin of the majority of capital and the implementation of IT"*. However, the use of Fisher's exact test showed that in this case the null hypothesis should be rejected, and that the observed variables are interdependent.

Table 4 shows the descriptive statistics as a result of managers evaluation, where managers declared what are, from their view, the advantages of IT. The *Process continuity* received the highest average grade (3.6429). Based on these results it appears that managers are aware of the importance of IT for the *Process continuity* in the cluster.

However, in the past year in the enterprise Fiat, around which enterprises are gathered in the automotive cluster, there has been production cease three times and disruption of the process continuity. Given that 57% of enterprises in the sample said that they do not apply IT, this can be one of the reasons for disrupting the continuity of the production process in enterprises around Fiat. The greatest standard deviation or variance in responses of managers is present with *Cost reduction* (1.31535), as the benefits of the IT implementation.

Table 4 Descriptive statistics – benefits from IT implementation

	Sample size	Min	Max	Mean	Std. deviation
IS *	28	1.00	5.00	3.4643	1.26146
SR	28	2.00	5.00	3.2857	1.24297
IR	28	2.00	5.00	3.1071	1.19689
CR	28	2.00	5.00	3.2143	1.31535
FD	28	2.00	5.00	3.4286	1.28894
PQ	28	1.00	5.00	3.1429	1.29713
PC	28	2.00	5.00	3.6429	1.19301

Table 5 presents descriptive statistics for the reasons why 16 enterprises from the sample had approached the IT implementation. The highest average grade was given by the managers to the reason *Lack of financial resources* (4.3750). In addition, it is the only reason that, by the managers, does not deserve grades 1 and 2 (min grade is 3). However, as in the structure of enterprises that do not apply IT there is a larger number of small (and medium) enterprises, the fact that *Lack of financial resources* was most often cited by the managers as the reason for missing implementation of IT is not a big surprise. The reason is that, in contemporary literature, *Lack of financial resources* is usually mentioned as one of the key constraints for survival and development of small and medium-sized enterprises. The highest standard deviation in responses of managers is noticeable for the reason *The possibility of carrying out all tasks without introducing IT*, which indicates a discrepancy in attitudes of managers of enterprises that do not apply IT about their usefulness and needs.

Table 5 Descriptive Statistics – Reasons for not implementing IT

	Sample size	Min	Max	Mean	Std. deviation
Inadequately trained employees	16	2.00	5.00	3.6875	.87321
Lack of financial resources	16	3.00	5.00	4.3750	.71880
No technical possibilities for the application of technology	16	2.00	4.00	2.5000	.63246
The possibility of carrying out all tasks without introducing IT	16	2.00	5.00	3.4375	1.31498

To determine whether the effects of the implementation of IT are interconnected (referring to the attitudes of managers of the existence and significance of the effects of applying IT), correlation analysis has been applied. More specifically, the correlation analysis shows that between the assessment of effects of implementation of IT there is a positive quantitative correlation, since all correlation coefficients are positive. The degree of correlation is not uniform, but it can be generally concluded that the effects of the application of IT are interconnected (Table 6). Strongest connections can be seen between *Sharing information* and *Process continuity* (0.796), *Supply reliability* and *Product quality* (0.537), *Information sharing* and *Fast delivery* (0.525), as well as between *Fast delivery* and *Process continuity* (0,520).

* IS – information sharing, SR – Supply reliability, ID – Inventory reduction, CD – costs reduction, FD – Fast delivery, PQ – Product (service) quality, PC – Process continuity.

Similar results proceeded from the application of *Hierarchical Cluster Analysis*. The aim of this analysis is grouping or linking the observed variables, in this case the effects of the IT application. The dendrogram shows the way these effects are interconnected (Figure 3).

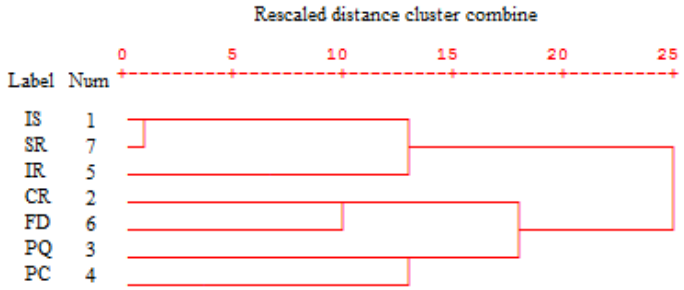

Fig. 3 The dendrogram based on hierarchical cluster analysis

Table 6 Correlation analysis: IT implementation effects

		IS	SR	IR	CR	FD	PQ	PC
IS	Correlation Coefficient	1.000	.455(*)	.393(*)	.323	**.525(**)**	.266	**.796(**)**
	Sig. (2-tailed)	.	.015	.039	.094	.004	.171	.000
	Sample size	28	28	28	28	28	28	28
SR	Correlation Coefficient	.455(*)	1.000	.221	.418(*)	.341	**.537(**)**	.371
	Sig. (2-tailed)	.015	.	.258	.027	.076	.003	.052
	Sample size	28	28	28	28	28	28	28
IR	Correlation Coefficient	.393(*)	.221	1.000	.386(*)	.426(*)	.269	.220
	Sig. (2-tailed)	.039	.258	.	.043	.024	.166	.260
	Sample size	28	28	28	28	28	28	28
CR	Correlation Coefficient	.323	.418(*)	.386(*)	1.000	.368	.389(*)	.367
	Sig. (2-tailed)	.094	.027	.043	.	.054	.041	.055
	Sample size	28	28	28	28	28	28	28
FD	Correlation Coefficient	.525(**)	.341	.426(*)	.368	1.000	.461(*)	**.520(**)**
	Sig. (2-tailed)	.004	.076	.024	.054	.	.014	.005
	Sample size	28	28	28	28	28	28	28
PQ	Correlation Coefficient	.266	.537(**)	.269	.389(*)	.461(*)	1.000	.331
	Sig. (2-tailed)	.171	.003	.166	.041	.014	.	.086
	Sample size	28	28	28	28	28	28	28
PC	Correlation Coefficient	.796(**)	.371	.220	.367	.520(**)	.331	1.000
	Sig. (2-tailed)	.000	.052	.260	.055	.005	.086	.
	Sample size	28	28	28	28	28	28	28

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The dendrogram was constructed by using Ward's method, where Euclidean distance was used as the criterion. From the dendrogram it can be seen that the strongest connection is between *Information sharing* and *Process continuity*, and at the next level *Fast delivery* joins them. On the other hand, there is a strong link between *Supply reliability* and *Product quality*, and while weakly linked are the effects *Inventory reduction* and *Costs reduction*.

If the dependence of the orientation of managers regarding the effects of IT application in relation to the ownership of capital, the size of the enterprise and the application of IT is analyzed, it can be concluded that the first two independent variables (ownership of capital and enterprise size) do not affect the managers' attitude on the usefulness of IT, for any of the above effects. However, when it comes to the impact of IT application, the analysis shows that its presence in the enterprises is affected by the attitude of managers on the effects of application. Statistically significant influence occurs for the following effects: *Inventory reduction*, *Cost reduction* and *Product quality*. Tables 7, 8, 9, and 10 show where dependence exsists (the table for *Product quality* is missing since the results for this effect are the same as in the case of *Cost reduction*).

Table 7 Crosstabulation: Enterprises by the effect Inventory reduction and IT implementation

			IR		Total
			Yes	No	
IT	Applied	Count	9	3	12
		% within IT	75.0%	25.0%	100.0%
		% within Cluster Number of Case	69.2%	20.0%	42.9%
	Not applied	Count	4	12	16
		% within IT	25.0%	75.0%	100.0%
		% within Cluster Number of Case	30.8%	80.0%	57.1%
Total		Count	13	15	28
		% within IT	46.4%	53.6%	100.0%
		% within Cluster Number of Case	100.0%	100.0%	100.0%

Table 8 Fisher's Exact Test

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig.
Pearson Chi-Square	6.892(b)	1	.009	
Continuity Correction(a)	5.029	1	.025	
Likelihood Ratio	7.182	1	.007	
Fisher's Exact Test				**.010**
Sample size	28			

Table 9 Crosstabulation: Enterprises by the effect Costs reduction and IT implementation

			CR		Total
			Yes	No	
IT	Applied	Count	9	3	12
		% within IT	75.0%	25.0%	100.0%
		% within Cluster Number of Case	75.0%	18.8%	42.9%
	Not applied	Count	3	13	16
		% within IT	18.8%	81.3%	100.0%
		% within Cluster Number of Case	25.0%	81.3%	57.1%
Total		Count	12	16	28
		% within IT	42.9%	57.1%	100.0%
		% within Cluster Number of Case	100.0%	100.0%	100.0%

Table 10 Fisher's Exact Test

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig.
Pearson Chi-Square	8.859(b)	1	.003	
Continuity Correction(a)	6.711	1	.010	
Likelihood Ratio	9.304	1	.002	
Fisher's Exact Test				**.004**
Sample size	28			

In order to complete the analysis it seems necessary and justified to include the cluster analysis of enterprises in the sample, in terms of their grouping into clusters depending on the effects of the IT application. In this case clustering was performed by using the *K-mean cluster*. In adition, tables are presented from which can be seen the average grades of the effects of IT application (Table 11), and the number of enterprises belonging to the clusters according to these assessments (Table 12).

Table 11 Final cluster centers

	Clusters	
	1	2
IS	4.15	2.87
SR	4.15	2.53
IR	3.69	2.60
CR	4.15	2.40
FD	4.31	2.67
PQ	4.00	2.40
PC	4.38	3.00

Table 12 Custer size

		Size
Cluster	1	13
	2	15
Total		28

Based on the above tables, it can be concluded that the enterprises that belong to the first cluster are considered to have significant effects of applying IT, unlike enterprises that belong to the second cluster. Based on table 12, it can be seen that the first cluster is smaller (13) compared to the second, which includes the enterprises where the effects of IT are considered less important.

Finally, in order to accept a general conclusion that the IT application is associated with the achievement of positive effects in the observed fields, correlation analysis has been used (to indentify connection between the use of IT and belonging of enterprises to previously shown clusters). For the same reason as in the previous cases, Fisher's exact probability test has been used again (Tables 13 and 14). In this case, the null hypothesis can be formulated as: *"There is no correlation beetween belonging to clusters and application of IT*", and as an alternative: *"There is a correlation beetween belonging to clusters and application of IT".*

Table 13 Crosstabulation: Enterprises by cluster affiliation and IT implementation

			Cluster affiliation		Total
			Cluster 1	Cluster 2	
IT	Applied	Count	11	1	12
		% within IT	91.7%	8.3%	100.0%
		% within Cluster Number of Case	84.6%	6.7%	42.9%
	Not applied	Count	2	14	16
		% within IT	12.5%	87.5%	100.0%
		% within Cluster Number of Case	15.4%	93.3%	57.1%
Total		Count	13	15	28
		% within IT	46.4%	53.6%	100.0%
		% within Cluster Number of Case	100.0%	100.0%	100.0%

Table 14 Fisher's Exact Test

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig.
Pearson Chi-Square	17.279(b)	1	.000	
Continuity Correction(a)	14.242	1	.000	
Likelihood Ratio	19.733	1	.000	
Fisher's Exact Test				**.000**
Sample size	28			

Based on the previous tables, precisely basis on the significance level in the table that refers to the result of Fisher's exact probability (table 14), which is 0.000, and that means less than 0.01, it can be concluded that the null hypothesis should be rejected. This means that there is a positive correlation between the use of IT and managers' awareness about the effects that it provides.

CONCLUSION

The importance of the application of IT was highlighted through the advantages of IT, as well as factors that may limit the process of their application. The automotive cluster of the Republic of Serbia, as a form of enterprises networking, is a source of competitive advantage, especially for small and medium-sized enterprises that do not have the possibility, due to limited resources, to survive independently in modern conditions. In addition, the automotive cluster enables connection of local enterprises with successful partners from other countries, which ensures the exchange of knowledge, experience and skills. In this way, the automotive cluster, besides being a source of competitive advantage for individual enterprises, included within the network, certainly contributes to greater regional development and survival of the automotive industry in the Republic of Serbia. Like other forms of networking, automotive cluster functioning cannot be imagined without appropriate IT.

The aim of the research was to examine the usefulness of IT implementation, in terms of the effects that occur as a result. On the other hand, the aim was to examine the reasons for rejection of IT and the possibility of their elimination.

The most important effects of applying IT are *Process continuity*, *Sharing information* and *Fast delivery*, which does not mean that the application of IT should only be expected in those areas. However, regardless of this "average" determination of managers, there are a lot of others who do not believe that the use of IT can contribute to accomplishment these and other aforementioned effects, and that indicates a fairly high standard deviation.

Regarding the factors that contribute to the lack of application of IT the most significant are: *Lack of financial resources* and *the possibility of carrying out all tasks without introducing IT*. Since the second reason has very high standard deviation, it can be concluded that some enterprises really have a problem with the *Lack of financial resources*, but there are those whose managers believe that the implementation of IT is not a necessary condition for successful management in modern conditions.

The results of the analysis, which could be seen as promoters of IT application, are related to the correlation analysis. According to the results of this analysis, it is concluded that the effects of the application of IT are interconnected, which means that it can be expected that they, in fact, provide synergistic effects. Apart from a few exceptions, the correlation coefficients that show the connection between the effects of the application of IT, range from about 0.380 to as much as 0.796.

Although the results generally confirm the relationship among the use of IT and the expected effects, based on the application of *Fisher's exact test*, it was found that there is a direct correlation in the case of *Inventory reduction*, *Cost reduction* and *Product quality*.

Finally, the confirmation that the enterprises whose managers consider IT implementation as significant and justified are mainly those that apply IT, provides cluster analysis, and also testing hypotheses based on *Fisher's exact probability test*. This means that enterprises that have implemented IT are realized utility, or had the opportunity to realize the positive effects of the application of IT. On the other hand, most of the enterprises that have not yet implemented IT are not even aware of the significance of IT for achieving positive effects and improving the quality of business. This conclusion is fully consistent with the view of managers of enterprises that have not yet implemented IT. According to their opinion one of the most important factors for the lack of implementation is the belief that "*It is possible to carry out all the tasks without the introduction of IT"*.

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ZNAČAJ INFORMACIONIH TEHNOLOGIJA ZA AUTOMOBILSKI KLASTER REPUBLIKE SRBIJE

Umrežavanje preduzeća javlja se kao jedna od posledica trenda globalizacije i težnje za povećanjem sposobnosti radi ostvarenja zahteva potrošača. Funkcionisanje umreženih preduzeća, kao složenih interorganizacionih mreža, u savremenim uslovima nije moguće bez implementacije adekvatnih informacionih tehnologija (IT). Kako poslovni klasteri predstavljaju jedan od oblika umrežavanja preduzeća, u cilju povećanja konkurentske prednosti i tržišne pozicije, u radu će biti analizirana primena IT u klasterima, na primeru automobilskog klastera Republike Srbije. Analiza je sprovedena na bazi uzorka od 28 preduzeća, članica klastera. Generalni zaključak koji se nameće na osnovu rezultata analize jeste da postoji veza između implementacije IT i ostvarenja pozitivnih efekata u određenim segmentima poslovanja (Razmena informacija, Pouzdanost snabdevanja, Smanjenje zaliha, Smanjenje troškova, Brza isporuka, Kvalitet proizvoda i Kontinuitet procesa), što znači da preduzeća koja su implementirala IT ostvaruju pozitivne efekte u posmatranim oblastima. U postupku analize primenjeni su statistički alati: deskriptivna statistika, Fišerov test tačne verovatnoće, korelaciona analiza i klaster analiza.

Ključne reči: *umrežavanje preduzeća, informacione tehnologije, automobilski klaster, korelaciona analiza, klaster analiza*.