

# *The Influence of Outsourcing and Information and Communication Technology on Virtualization of the Company*

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In the article we investigate the field of virtual organizations, which in the definition of many authors consists of two components: outsourcing and information and communication technology. In the study we have tried to determine which of the two, in the opinion of employees working in the area of Slovene tourism, contributes to a greater degree to virtualization of the company. We determine that outsourcing influences the virtualization of the company more strongly than does information and communication technology, since it enables the company to acquire new knowledge and know-how and increase its competitiveness in the marketplace.

*Key Words:* virtual organization, outsourcing, information and communication technology

*JEL Classification:* L22, D23

## **Introduction**

The development of information technology and telecommunications is changing the modern economic and social system. Economic subjects are particularly confronted with an external environment that is constantly changing, one which is characterized by an increasing complexity. The clear and structured economic scenario of the 1980s has been cast off in a context in uncertainty, constant changes and, consequently, difficulties in general are forcing companies to adapt their competitive approach and to develop new capabilities. The globalization of the marketplace and the rapid spread of new technologies linked with the world of information science and telecommunications have profoundly marked the operating of the economic systems in every country. Rapid and significant technological changes have led to decisive shifts in production

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techniques and the administering of technological, financial and human resources, which has reinforced the high speed of transfer of innovative processes, and has reformed consumption as well as the channels through which information flows and is transmitted. Collectively, these elements have profound economic implications for everyone involved in the production and broader societal system (Ye, Xu, and Chen 2002; Bavec 2002; Bauer and Köszgi 2003; Cooper and Rousseau 1999; Jansen, Steenbakkens, and Jägers 1999).

As a response to such changes there has been a change in the organization of processes within companies, and this had led to the phenomenon of the virtual organization. Such an organization is characterized by the use of both information and computer technology and outsourcing.<sup>23</sup> The degree to which one or the other is used varies. Companies use one or the other, or even both simultaneously. As the research shows, the use of both outsourcing and computer and information technology has increased greatly (Sigala 2003; Sourenkova and Louvieris 2005; Lamminmaki 2005). This study focuses on the tourist sector of the economy, and aims to determine which of the two factor has a greater influence on the degree of virtualization of a company. Directors of selected companies from the area of tourism participated in the study. They were asked to indicate the degree to which each factor contributes to the virtualization of the company. Our conclusions are derived from a number of perspectives related to each factor, including: competitiveness and competitive advantage of a company, focussing on key competencies, knowledge and know-how, more efficient use of sources, improved service and greater customer satisfaction, and also fear of unemployment.

The article is structured into four main sections. In the introduction, we present the area of research, the research problem, the purpose and aims of the study. This is followed by the theoretical and empirical parts, and then the conclusion. In the theoretical part we provide an overview of the various definitions of virtual organization within the literature, as well as a synthesis of various researchers' viewpoints on the phenomenon of virtual organization. The empirical section begins by providing a description of the methodology and the sample, before moving to an analysis of the study results. In the conclusion we summarize the most important outcomes of the study.

### **Definition of Virtual Organization**

The term virtual organization was coined in the late 1990's to denote a new way of aligning business practices, core competencies, and product

and service delivery such that they would allow for a more effective way to satisfy consumer demands (Southard 1998).

There are three generic types of accounts regarding virtual organizations in the literature (Burn, Marshall, and Barnett 2002; Shao, Lee, and Liao 2000; Shao and Liao 1996). The first regards organizations that outsource some of their business activities, forming virtual alliances to achieve organizational objectives. Virtual organizations may be formed by integrating several companies' core competencies and resources. A virtual company, thus, is a collection of several companies organized to behave as if it were a larger, multifaceted organization. Research reveals that there exist various definitions of this type of virtual organization.

Donlon (Southard 1998) defines a virtual organization as '... one that focuses on its core competencies and engages in strategic sourcing and partnership development to support its non-core activities.'

Strausak (1998) defines a virtual organization as a form of cooperation involving legally autonomous companies, institutions and/or individuals delivering a product or service on the basis of a common business understanding. The cooperating units participate in the collaboration primarily with their core competencies and present themselves to third parties as a unified organization when delivering the product or service.

Robbins (2005) defines a virtual organization as, typically, a small, core organization that outsources one or more of its primary business functions. In structural terms, the virtual organization is highly centralized, with little or no departmentalization.

The most resounding view of virtualization that remains completely neutral in terms of technology has been developed by Mowshowitz (1999; 2002), who introduced the concept of the 'switching principle.'

He describes a virtually organized task as a goal-oriented activity that is implemented by an appropriate assignment or reassignment of concrete satisfiers to the abstract requirement of the task. Switching depends on the categorical separation of requirements from satisfiers. At any given moment there is an allocation of satisfiers to requirements, though the particular allocation can change over time.

The second type of descriptions pertains to organizations that are built up by means of virtual links with information technology. Earlier work in the area of ICT and organizations points in the general direction that ICT contributes to organizational structures and provides an increasingly virtual mechanism for realizing organizational objectives.

Chaffey (2002) defines a virtual organization as an organization which

uses ICT to allow it to operate without clearly defined physical boundaries between different functions. Buchanan and Huczynski (2004) define a virtual organization as an organization where a large number of the organization members use electronic channels as their main (or even only) medium of contact with each other, as well as with the rest of the organization.

According to Collins (2003), a virtual organization can be broadly defined as an organization that forms, and/or maintains, some or all of its internal or external relationships electronically. Its work products are of an electronic rather than a paper nature. This broad definition of virtual organization includes organizations whose relationships with clients, customers, vendors, consultants, or joint venture partners are maintained virtually.

Fulop and Rifkin (2004) define a virtual organization as an organization that is usually highly flexible and often relies on internet businesses or the use of technology in order to limit the importance of physical space and location in favour of cyberspace.

The third approach to virtual organization is perhaps the most complicated. This approach is an amalgam of the two approaches previously mentioned, in which authors move almost interchangeably between the virtual organization as an electronic or online organization, and the virtual organization as a somewhat transient network of people, ideas, competencies and resources which come together for a particular purpose. The framework of understanding virtual organization is, in this case, often subjective and open to myriad interpretations. These interpretations hinge on the particular manner in which the individual perceives organization.

An overview of the literature shows that there are three fundamental standpoints on the concept of virtual organization. Two have a relatively uniform view of virtual companies, whereas the third allows for various viewpoints. Characteristic of this last viewpoint is that the authors consider it to be a *mélange* of the other two viewpoints. They are not in accord about which of the two factors, outsourcing or ICT, is more typical of virtual organization; they are open to various views and interpretations. The authors of this article also believe that both factors are necessary to the virtual company, and it is for this reason that we chose to examine the influence of both factors on the virtualization of a company. We are convinced that both are of paramount importance for the transition from classical to virtual organization.

## **The Methodology**

In accordance with the third approach, we defined the virtual organization as an organization that outsources its non-core competence activities and maintains some or all of its internal and external relationships electronically. The main purpose of our study was to discern whether or not the two components – outsourcing and ICT – are equally important for the virtualization of companies in the tourism industry.

To do this, we developed a three-part questionnaire. The first part pertained to the general characteristics of the respondents (sex, type of organization, level and field of education . . .). The central part of the questionnaire contained 47 items that, on a five-point Likert-type scale, measured the degree to which the respondents agreed with several features of outsourcing or ICT and their importance for the (virtual) organization. The items were defined according to various aspects of outsourcing and ICT found in past theoretical discussions and empirical research (Benson and Ieronimo 1996; Buhalis 1998; Gautreau 2005; Lynch 2004; Lankford and Parsa 1999; Ellram and Billington 2001, Wilding and Rein 2004; Lewis, Semein and Talalayevsky 1998), which can be summarized as:

- Outsourcing/ICT can contribute to the competitiveness and competitive advantage of a company.
- Outsourcing/ICT can help a company to focus on its core-competencies.
- Outsourcing/ICT can help in the acquisition of new knowledge and know-how.
- Business process re-engineering experienced due to implementation of outsourcing/ICT can result in more efficient and cost-effective use of resources.
- Outsourcing/ICT improves the quality of service and contributes to greater customer satisfaction.
- Implementation of outsourcing/ICT is usually accompanied by employees' fear of being made redundant.

The last part of the questionnaire contained our definition of virtual organization, which was based on the two components already described (outsourcing and ICT). The respondents had to weight the degree to which each component is important for the virtualization of the company – that is to say, they had to assign a value from one to five denoting the level of importance of the given component.

TABLE 1 Respondents by field of education

Field of education	Number	Percentage
Education	1	1.4
Humanities	1	1.4
Social sciences, business and law	36	50.0
Science	9	12.5
Engineering, manufacturing and construction	8	11.1
Agriculture	1	1.4
Health and welfare	3	4.2
Tourism	13	18.1
Total	72	100.0

### The Sample

Four firms in the tourism industry, selected on the basis of their position in the marketplace and on the basis of their profiles, were involved in the study – namely 1 hotel and 1 spa (H55.100 according to the National Standard Industrial Classification of all Economic Activities), 1 casino (O92.712 according to the National Standard Industrial Classification of all Economic Activities) and 1 travel agent (I63.300 according to the National Standard Industrial Classification of all Economic Activities). The subsequent state of the survey included all executives, managers, consultants and skilled employees from these firms.

Altogether, 72 questionnaires were returned, making for a response rate of around 40%. There were 64% men and 36% women included in the study. The majority of respondents (90.3%) had finished the first stage of tertiary education (level 5 according to ISCED97), 6 of them (8.3%) had finished the second stage of tertiary education (ISCED97 level 6) and 1 of them had finished only lower secondary education.

Most of them (50%) had finished a study program in the field of social sciences, business or law (field 4 according to ISCED97).

They were, on average, 36.6 years old with an average work experience of 12.8 years.

### Results

We began the analysis of the data compiled with the final survey question, which asked respondents to indicate the importance of outsourcing versus ICT for virtualization of the company. The average weight for out-

TABLE 2 Three categories of respondents

Category	Number	Percentage
Group 1: Outsourcing contributes more to virtualization	41	66.1
Group 2: ICT contributes more to virtualization	7	11.3
Group 3: Both components are equally important	14	22.6
Total	62	100.0

sourcing was 61.8% and 38.2% for ICT, which indicates that, on average, outsourcing contributes more to virtualization of a firm than does ICT. However, we can see rather large discrepancies among respondents. The lowest identified weight for outsourcing was 30% (70% for ICT) and the highest 90% (10% for ICT). The idea was to categorize all respondents into three groups: those who think outsourcing contributes more to virtualization (weight for outsourcing is larger than 50%), those who think ICT contributes more (weight for outsourcing is lower than 50%) and the group which thinks both components are equally important (both weights are equal to 50%). We can see that the majority of them considered that outsourcing contributes more to virtualization of a firm (see table 2), as just 7 of them thought that ICT is more important for virtualization. Ten of them did not answer the question. In the next stage, we tried to find significant characteristics for each category of respondents.

First, we tested whether education, age, work experience and job-type had a significant impact on how respondents regarded the relative importance of outsourcing versus ICT for the virtualization. We performed the contingency analysis<sup>24</sup> and found that the education level, age, work experience and type of job were not significantly correlated with the category of each respondent. On the other hand, the estimated contingency coefficient 0.58 and the value of Chi-square test statistics equal to 31.8 indicated a significant correlation between the three categories of respondents and their field of education (see table 3).

Most of the respondents who considered outsourcing to be more important for virtualization had finished studies in social sciences, business and law or tourism. For the most part, those educated in the fields of science or engineering, manufacturing, or construction fell within the group of respondents who considered ICT more important for the virtualization. In the group of those surveyed that does not give preference to either outsourcing or information and communication technology, the representation in terms of the area of education is more or less uniform:

TABLE 3 Categories of respondents by field of education

Field of education	(1)	(2)	(3)	(4)
Humanities	0	0	1	1
Social sciences, business and law	27	0	4	31
Science	1	3	5	9
Engineering, manufacturing and construction	2	3	2	7
Health and welfare	2	0	0	2
Tourism	9	1	2	12
Total	41	7	14	62

NOTES Column headings are as follows: (1) group 1 (outsourcing > 50%), (2) group 2 (ICT > 50%), (3) group 3 (50%–50%), (4) total. 14 cells (77.8%) have an expected count of less than 5. The minimum expected count is 0.11.

Contingency analysis	Value	df	Asymp. Sig. (2-sided)	Approx. Sig.
Pearson Chi-Square	31.830(a)	10	.000	
Contingency Coefficient	.582			.000

half come from the area of sociology, business, law and tourism, and half from the area of science or engineering.

Second, we attempted to analyze how the respondents' attitude to outsourcing and ICT determines the three categories of respondents. Since the central part of the questionnaire contained 47 specific items that, on a five-point Likert-type scale, measured the degree to which the respondents agreed with several features of outsourcing or ICT and their importance for the (virtual) organization, it would be quite difficult to evaluate all of them separately. Instead, we attempted to describe their attitude by means of more general evaluative dimensions. We performed two separate factor analyses, one based on items related to outsourcing features and the other based on items related to ICT features.

The estimation of factor matrices commenced with all items included in the analysis. However, some items were omitted, based on a low measure of sampling adequacy value and low communalities.<sup>25</sup> After several steps of respecification and evaluation, we agreed on the models shown in tables 4 and 5. The final step was the computation of coefficient Alpha (Cronbach 1951) for each of the dimensions to ascertain internal consistency for each dimension. As we can see, almost all coefficients exceed the value of 0.7 – the generally agreed lower limit of coefficient Alpha (Robinson, Shaver, and Wrightman 1991).



TABLE 4 Employees' attitude to outsourcing

Questionnaire item	(1)	(2)	(3)
24. Outsourcing is a consequence of demands for higher share profitability.	0.67		
4. Outsourcing allows a company to control expenses.	0.63		
6. Outsourcing allows a company to be more flexible.	0.62		
20. Outsourcing reduces business risks.	0.57		
10. Outsourcing allows a company to thoroughly transform itself.	0.56		
23. Outsourcing is a consequence of globalization.	0.55		
27. Outsourcing allows a company to become more productive.	0.51		
3. Outsourcing allows a company to save on expenses.	0.49		
1. Outsourcing allows a company to achieve a competitive advantage.	0.47		
15. Outsourcing means fragmenting a company.		0.75	
25. It is important for a company that all its activities are carried out in-house.		0.74	
16. Outsourcing means losing a company's identity.		0.73	
22. Outsourcing is unnecessary.		0.62	
21. All activities of a company can be successfully carried out in-house.		0.57	
19. Outsourcing means redundancies.		0.53	
11. Outsourcing allows a company to concentrate on key activities.		-0.50	
26. Outsourcing grants a company access to specialists.		-0.45	
28. Higher standards of quality can be guaranteed for the activities carried out within a company.		0.42	
18. Contractors cannot be trusted.		0.39	

*Continued on the following page*

According to the factor matrix in table 4, the attitude of employees to outsourcing can be explained through 3 general dimensions or aspects (factors):

- A competition aspect – how can outsourcing contribute to the competitiveness of a firm?
- An organizational aspect – what consequences does outsourcing have for the organizational structure?
- A knowledge aspect – how can outsourcing help a firm to acquire new knowledge and ideas for promoting development?

TABLE 5 *Continued from the previous page*

Questionnaire item	(1)	(2)	(3)
13. Outsourcing allows a company to acquire new ideas.			0.86
17. Outsourcing allows an increase in the quality of products/services.			0.79
12. Outsourcing allows a company to acquire new knowledge.			0.73
7. Outsourcing allows a company to be more effective.			0.53
9. Outsourcing is required when a company has a low level of innovation.			0.46
2. Outsourcing allows a company to survive in the market.			0.40
Cronbach Alfa	0.82	0.68	0.79

NOTES Column headings are as follows: (1) competition aspect, (2) organizational aspect, (3) knowledge aspect. Factors were extracted by means of the principal axis factoring method. The 'Direct Oblimin' factor rotation (oblique rotation) was used to simplify the factor solution. Only factor loadings higher than 0.4 (lower than -0.4) are shown in the factor matrix.

When discussing their attitude toward ICT, two aspects are evident from the factor matrix in table 5:

- An economic aspect – how can ICT contribute to the overall efficiency and cost-effectiveness of a firm?
- A communicational aspect – how important it is to implement ICT in most parts of business activities?

In the last stage, factor scores were estimated for each of the five factors, and analysis of variance was used to test whether identified factors (several aspects of outsourcing and ICT) differ among different groups of employees. The average scores for each factor and category of employees are shown in table 6. The competition and knowledge aspects referring to outsourcing were the only dimensions showing significant differences between categories. Interestingly, the aspect referring to ICT did not differentiate significantly between categories.

Competition and knowledge aspect, both referring to outsourcing, are most clearly present in the group of employees that considered outsourcing contributes relatively more to virtualization of the company, and least present in the group of employees that considered ICT to be a major determinant of virtualization. Thus, the employees who agreed with the statement that outsourcing contributes to a firm's competitiveness – and helps it to acquire new knowledge and ideas to promote development – considered outsourcing to be relatively more important for

TABLE 6 Employees' attitude to ICT

Questionnaire item	(1)	(2)
4. ICT allows a company to save on time.	0.88	
5. ICT allows a company to be more flexible.	0.80	
3. ICT allows a company to save on expenses.	0.80	
8. ICT is a great advantage in everyday tasks.	0.78	
7. ICT is unnecessary.	-0.78	
1. ICT allows a company to achieve a competitive advantage.	0.75	
6. The introduction of ICT leads to a higher level of efficiency.	0.68	
15. The appearance of a webpage reflects the organization and reputation of a company.	0.66	
12. A well-designed webpage can contribute to achieving better business results.	0.60	
2. ICT allows a company to survive in the market.	0.59	
18. Personal contact is very important in an industry such as tourism, which limits the use of ICT in the guest-institution relationship.	0.43	
10. It is recommendable that all communication be carried out with the help of information technology.		0.83
17. In order to avoid mistakes, any communication between a company and a guest should be carried out through ICT until the guest arrives.		0.75
16. It is important that all guests use the on-line reservations system.		0.51
11. It is important that all orders be carried out with the help of information technology.		0.50
Cronbach Alpha	0.81	0.73

NOTES Column headings are as follows: (1) economical aspect, (2) communicational aspect. Factors were extracted by means of the principal axis factoring method. The 'Direct Oblimin' factor rotation (oblique rotation) was used to simplify the factor solution. Only factor loadings higher than 0.4 (lower than -0.4) are shown in the factor matrix.

virtualization, whereas those who disagreed with these statements considered ICT to be relatively more important.

We can actually confirm on the basis of the results that in the group which places more noticeable emphasis on information and communication technology as a factor of virtualization, there is no perceptible presence of views showing their agreement with the positive contribution of information and communication technology on the virtualization of the company. The results show that in this group there is not a statistically significant difference between the individual viewpoints. In effect, it is more a matter of this group not agreeing with the positive

TABLE 7 A average factor scores by category of employees

Category	Outsourcing			ICT	
	(1)	(2)	(3)	(4)	(5)
Group 1: Outsourcing contributes more to virtualization	0.20	-0.11	0.22	0.07	-0.02
Group 2: ICT contributes more to virtualization	-1.03	0.02	-0.75	-0.05	0.10
Group 3: Both components are equally important	-0.23	0.08	-0.03	0.13	-0.20

NOTES Column headings are as follows: (1) competitiveness aspect, (2) organizational aspect, (3) knowledge aspect, (4) economical aspect, (5) communicational aspect.

contribution of outsourcing. We can thus conclude that those who do not accept outsourcing as a beneficial factor believe that information and communication technology is a more important factor of virtualization than is outsourcing.

The study focused solely on companies from the area of the Slovene tourist industry, which, of course, somewhat limits the research. There is room for further studies to expand the focus to other business areas. For example, it would surely be valuable to carry out a comparative analysis among companies from various economic sectors, as that would determine the various degrees of virtualization within individual sectors. On the basis of our study, it would also be possible for future researchers to examine the role that various types of education play in understanding the influence of outsourcing and information and communications technology on the degree of virtualization. In any case, there are a number of possibilities for further study, especially since studies of virtual organizations are a relatively new phenomenon.

### Conclusions

The onset of the new millennium has given rise to many changes in business operations, and these operations are indicating their responses to the ever-greater demands of the marketplace. One of the changes is surely the rapid implementing of information and communication technology into work processes in order to accelerate their execution. Companies have also recognized that they lack the requisite knowledge to be able to compete successfully. In such cases, the decision to use outsourcing therefore seems to be the most suitable option. The outsourcing market is also developing in Slovenia, such that companies now have an increas-

ing number of options for finding a partner with whom to cooperate, or outsourcing partners to carry out work on their behalf. We can confirm that companies – also within the area of Slovene tourism – are becoming all the more virtual.

Employees' responses to virtualization of their company vary. In the study we determined that the majority of employees believes that outsourcing can contribute more to virtualization of the company, whereas information and communication technology does not have such a strong influence. Employees who give preference to outsourcing are, in terms of their area of education, primarily from the field of sociology. On the other hand, those who prefer to emphasize information and communication technology are from the fields of the technical sciences.

When we tried to discern factors that would most noticeably characterize respondents from each group, we determined that the inclination of employees to outsourcing is marked by three aspects, namely: those of competition, organization, and, lastly, of knowledge. The inclination of employees towards information and communication technology is marked by the economic as well as the communicative aspect. On the basis of factor analysis we also determined which of the viewpoints is more present in the individual groups of employees. The results show that employees who believe that outsourcing is more conducive to virtualization of the company are convinced that the use of outsourcing leads to greater competitiveness of the company and helps the company attain a higher level of knowledge. In the group that places greater emphasis on information and communication technology we found no statistically significant differences, which leads us to conclude that they do not agree with the positive contribution of outsourcing.

On the basis of the findings we can conclude that outsourcing is an activity that more strongly influences the virtualization of the company than does information and communication technology. Through the use of outsourcing, the company attains knowledge that it otherwise would not have, thereby increasing its range; all new knowledge contributes to the competitiveness of the company.

### **Notes**

- 1 Outsourcing has been viewed as a form of predetermined external provision with another enterprise for the delivery of goods and/or services that would previously have been offered in-house (Kakabadse and Kakabadse 2000).

- 2 Age and work experience were not real metric variables, since the respondents were categorized into groups by age and work experience.
- 3 Variables with a measure of sampling adequacy values of less than 0.5 and variables with communalities of less than 0.5 should be omitted from the factor analysis one at a time (Hair et al. 2006).

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