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Innovation and Human Resource Management: the Greek Experience

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The purpose of this paper is to investigate the pathways leading from innovation to organisational performance by using structural equation modelling. Specifically, we used this analytical tool to test a research framework that is constituted by a set of causal relationships between organisational contingencies, innovation, HRM policies (resourcing, training, rewards, relations), HRM outcomes (skills, attitudes, behaviour), and organisational performance. Employing data from organisations operating in the Greek manufacturing sector, results indicate that the impact of innovation on organisational performance is positive and mediated through HRM policies and HRM outcomes, and moderated by organisational context (management style, organisational culture).

Key words: Innovation strategy; HRM policies; Causality; Structural equation modelling; Greek manufacturing

1 Introduction

Although much has been written separately about the concepts of innovation and human resource management in improving organisational performance, the combination of the two in improving organisational performance has received less systematic attention in research literature (Looise & Riemsdijk, 2004). Taking into account that innovation is frequently defined as “deliberate and radical changes in existing products or services, processes or the organisation in order to reach competitive advantage compared with competitors” (Looise & Riemsdijk, 2004: 278), most literature in innovation is concentrated in the so-called ‘technical innovation’, considering the changes that refer to existing products or services, and processes, only (Looise & Riemsdijk, 2004). Moreover, although HRM is usually defined as “all management decisions and activities that affect the nature of the relationship between the organisation and its employees” (Beer, Spector, Lawrence, Quinn Mills, & Walton, 1984: 382), the majority of the literature in HRM distinguishes employee resourcing, development, rewards, and relations as the four key areas of HRM policies and practices.

Within the resource-based view of the firm, which advocates that an organisation can gain competitive advantage by attracting and retaining best human resources, universalistic and contingency HRM-performance linkage models have been either theoretically or empirically developed. The universalistic model suggests that a specified set of HR practices (the so called “best practices”) will always produce superior business results whatever the accompanying circumstances. The contingency model

argues that an organisation’s set of HRM policies and practices will be effective if it is consistent with other organisational strategies. However, there is no consensus amongst researchers regarding which model is the predominant one (Wood, 1999).

Specifically, the relationship between innovation strategy and HRM in improving organisational performance has been generally studied from a contingency perspective (Jimenez-Jimenez & Sanz-Valle, 2005). The contingency perspective in this case advocates ‘sequence’, supporting that innovation strategies are followed by HRM policies in determining business performance. According to this sequence business performance will be improved when the right ‘fit’, or ‘match’, between innovation strategies and HRM policies and practices is achieved. However, some authors have analysed the reverse sequence, advocating that HRM policies are followed by innovation strategies in determining business performance (Damanpour, 1991). Contrary to the contingency perspective, the universalistic perspective advocates ‘independence’, supporting that innovation strategies and HRM policies are mutually independent in determining business performance.

In analysing the impact of HRM on business performance each of the HRM-performance linkage models developed complements the others by adding constructs, variables or relationships (Alcazar, Fernandez, & Gardey, 2005). A serious limitation that recent reviews of the literature points out is that the link between HRM and business performance is considered like a ‘black box’, i.e., lack of clarity regarding ‘what exactly leads to what’ (Gerhart, 2005; Alcazar et al., 2005). In empirically investigating

these models most studies were based on cross-sectional data and the analysis employed was either 'hierarchical regression models' or 'competing regression models' without proving causality. Thus, Fey, Bjorkman & Pavlovskaya (2000) exhorted researchers to use 'structural equation modelling' (SEM) to illuminate the 'black box' (Wright, Gardner & Moynihan, 2003) between HRM systems and business performance. This is because the use of SEM is particularly appropriate when testing direct and indirect relationships between HRM policies and business performance and when testing theoretically derived paths among various exogenous and endogenous variables.

Considering the discussion above and that HRM is scarcely included in innovation strategy studies (Laursen & Foss, 2003) the primary research questions of this paper are:

1. What impact, if any, does innovation strategy and human resource management have upon organizational performance?
2. What is the causal path of this relationship?
3. What is the contingency framework of this relationship?

A supplementary goal in this paper is to empirically investigate the research questions by employing the structural equation modelling methodology, instead of the usual regression equation methodology. Considering further, that there are no studies that test theoretically derived paths among various exogenous and endogenous variables in the Greek context, an attempt has been made in this paper to investigate how innovation strategy and human resource management policies influence organisational performance in the Greek context.

2 Research Model and Hypotheses

From the discussion in the preceding section, three models may be identified relating innovation strategy, HRM policies, and organisational performance: the contingency model, the reciprocal contingency model, and the universalistic model. Specifically:

Contingency model: The underlying assumption of this model is that innovation strategy is the guiding force for developing specific HRM policies that will have a positive impact on organisational performance. Lists of employee resourcing, development, rewards, and relations HRM policies, connected with innovation strategy, have been proposed by Jimenez-Jimenez & Sanz-Valle (2005). Thus, innovation strategy determines HRM policies that are followed in an organisation.

Reciprocal contingency model: The underlying assumption of this model is that innovation strategy will have a positive impact on organisational performance if it has been formulated in relationship with some specific HRM policies that have already been developed in the organisation (Damanpour, 1991; Jimenez-Jimenez & Sanz-Valle, 2005; Zhao & Liu, 2006). Thus, HRM policies determine innovation strategy that is followed in an organisation.

Universalistic model: The underlying assumption of this model is that the formulation of innovation strategy does not depend on the formulation of HRM policies in an organisation, and vice versa, the formulation of HRM policies does not depend on the formulation of innovation strategy in an organisation. Thus, innovation strategy and HRM policies are completely independent in determining organisational performance.

Considering furthermore that regardless the innovation-HRM-performance linkage model followed, literature highlights that the organisation's innovative behaviour depends on the organisational context of the firm described by factors such as management-style (with respect to centralised or decentralised decision making) and organisational culture (with respect to task-oriented forms followed) (Damanpour & Gopalakrishnan, 1998; Murphy & Southey, 2003), Figure 1 presents the three innovation-HRM-performance linkage hypothesised causal models.

The hypotheses that go after the three models may be stated as follows:

(a) Contingency model:

HC:1 *Organisational context factors moderate innovation strategy.*

HC:2 *Innovation strategy is positively related with HRM policies.*

HC:3 *HRM policies are positively related with organisational performance.*

(b) Reciprocal contingency model:

HR:1 *Organisational context factors moderate HRM policies.*

HR:2 *HRM policies are positively related with innovation strategy.*

HR:3 *Innovation strategy is positively related with organisational performance.*

(c) Universalistic model:

HU:1 *Organisational context factors moderate innovation strategy.*

HU:2 *Organisational context factors moderate HRM policies.*

HU:3 *Innovation strategy is positively related with organisational performance.*

HU:4 *HRM policies are positively related with organisational performance.*

Although various lists of HRM policies that the innovating organisations should employ have been proposed, still, there is no consensus both in theoretical and empirical literature about the number and the type of HRM policies to be included in these lists. Specifically, there is a compromise that recruitment, performance appraisal, and incentives may constitute important HRM policies for innovating organisations, and there is no agreement if training and development, career paths, flexible contracts, and employee participation, represent important HRM policies for innovating organisations (Jimenez-Jimenez, & Sanz-Valle, 2005).

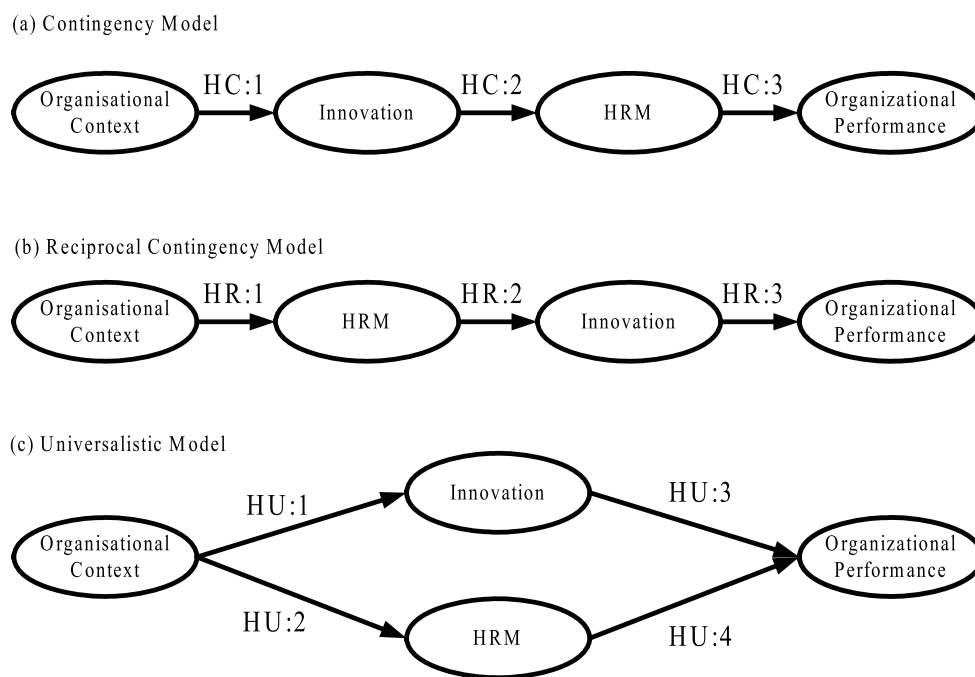


Figure 1: Innovation-HRM-Performance linkage hypothesised causal models

However, irrespectively of which specific HRM policies should be included in a relevant HRM list, the core philosophy of the Becker & Huselid (1998) HRM-performance linkage model, which has been categorised as the “most logical and definite model of the processes through which HR practices affect firm performance” (Wright et al., 2003: 25), suggests that the HRM policies of resourcing and development have an impact on employee skills, that together with employee rewards influence employee attitudes, that together with employee relations affect employee behaviours, which are subsequently translated into improved organisational performance. This HRM policies-HRM outcomes linkage hypothesised causal model is presented in Figure 2. Thus, the hypotheses that accompany the model in Figure 2 may be stated as follows:

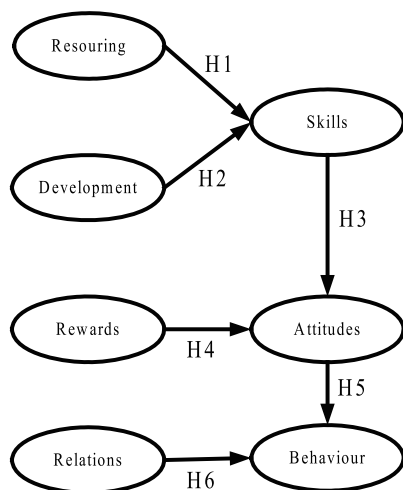


Figure 2: HRM policies-HRM outcomes linkage hypothesised causal model

- H1: *Employees' resourcing is positively related with employees' skills.*
- H2: *Employees' development is positively related with employees' skills.*
- H3: *Employees' skills are positively related with employees' attitudes.*
- H4: *Employees' rewards are positively related with employees' attitudes.*
- H5: *Employees' attitudes are positively related with employees' behaviour.*
- H6: *Employees' relations are positively related with employees' behaviour.*

Incorporating the model presented in Figure 2 in the block indicated by HRM in the models presented in Figure 1 respectively, the basic characteristics of the three models proposed in Figure 1, may be available as follows:

Contingency model: Organisational context moderates innovation. Innovation affects resourcing, development, rewards, and relations. These HRM policies in conjunction with skills and attitudes influence behaviour. Behaviour affects organisational performance.

Reciprocal contingency model: Organisational context moderates resourcing, development, rewards, and relations. These HRM policies in conjunction with skills and attitudes influence behaviour. Behaviour affects innovation. Innovation affects organisational performance.

Universalistic model: Organisational context moderates resourcing, development, rewards, and relations. These HRM policies in conjunction with skills and attitudes influence behaviour. Behaviour affects organisational performance. Organisational context moderates innovation. Innovation affects organisational performance.

Table 1: Characteristics of all the variables used in the study

Variable / Construct	Items and dimensions	Cronbach Alpha	Percent of variance explained
Innovation strategy	• Innovation processes • Improvement of goods • Wide range of goods [Measured on a Likert-scale ranging from 1=not very important to 5=totally essential]	0.55	53.9
Organisational performance	• Effectiveness • Efficiency • Development • Satisfaction • Innovation results • Quality [Measured on a Likert-scale ranging from 1=very bad to 5=very good]	0.93	74.1
Skills	• Competences • Co-operation between management and employees • Co-operation among employees [Measured on a Likert-scale ranging from 1=very bad to 5=very good]	0.91	84.2
Attitudes	• Motivation • Commitment • Satisfaction [Measured on a Likert-scale ranging from 1=very bad to 5=very good]	0.90	83.8
Behaviour	• Retention (counterpart of turnover) • Presence (Counterpart of absenteeism) [Measured on a Likert-scale ranging from 1=very bad to 5=very good]	0.83	85.8
Resourcing	• Recruitment • Selection • Separation • Flexible work arrangements [Measured on a Likert-scale ranging from 1=not at all effective to 5=highly effective]	0.80	63.2
Development	• Training and development • Monitoring training and development • Careers • Work design • Performance appraisal [Measured on a Likert-scale ranging from 1=not at all effective to 5=highly effective]	0.88	67.2
Rewards	• Job evaluation • Compensation • Promotion • Incentives • Benefits [Measured on a Likert-scale ranging from 1=not at all effective to 5=highly effective]	0.87	65.2
Relations	• Participation • Involvement • Communication • Health and safety [Measured on a Likert-scale ranging from 1=not at all effective to 5=highly effective]	0.82	65.1
Organisational context	• Management style [Measured on a Likert-scale ranging from 1= heavily centralised to 5=highly decentralised] • Organizational culture [Measured as 1 = power-oriented, 2 = role-oriented, 3 = project-oriented, 4 = fulfilment-oriented]	0.60	71.7

3 Methodology

Sample

A large questionnaire survey in 23 sector industries in the Greek manufacturing sector was carried out between March 2002 and September 2002. A sample of 600 Greek organisations was used from the main Greek directory ICAP (2001). The sample was obtained by employing the stratified methodology. The strata were the 23 manufacturing sector industries including organisations with more than 20 employees. 20 percent of the approximately 3000 organisations were randomly chosen from each stratum of the directory. One hundred and sixty nine (169) usable self-administered questionnaires were received, a response rate of approximately 28 percent.

Measures

Table 1 presents the dimensions of all the variables used in the study. For the classification of these variables I followed Katou and Budhwar (2006; 2007).

Consistency of the survey instrument

Construct internal consistency was checked computing Cronbach alphas. The figures in Table 1 indicate that the survey instrument is a reliable instrument for checking the model presented in Figure 1, because the vast majority of Cronbach alphas are much higher than 0.70 (Nunnally, 1978). Construct validity was examined by evaluating the percent of the total variance explained per dimension obtained by applying confirmatory factor analysis using varimax rotation and eigenvalues greater than one. The percent of total variance explained values reported in Table 1, are much higher than 50.0% indicating acceptable survey instrument construct validity (Hair, Anderson, Tatham & Black, 1995).

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Statistical analysis

To test the raised research questions of the proposed framework the methodology of 'structural equation models' or 'latent variable models' was used, that is much more powerful in investigating causal relationships between categorical variables than regression analysis (Hair et al., 1995).

4 Results

We tested the theoretical models presented in Figure 1 using the structural equation modelling (SEM) via the Statistical Package LISREL (Linear Structural Relations) and the maximum likelihood estimation (MLE) (see Jöreskog & Sörbom, 2004). We used MLE because tests of departure from normality, skewness and kurtosis for all variables used were all within acceptable statistical limits (Hair et al., 1995).

We assessed the overall model fit employing the chi-square test and the normed-chi-square test and examining the root mean squared error of approximation (RMSEA), the comparative fit index (CFI), and the nor-

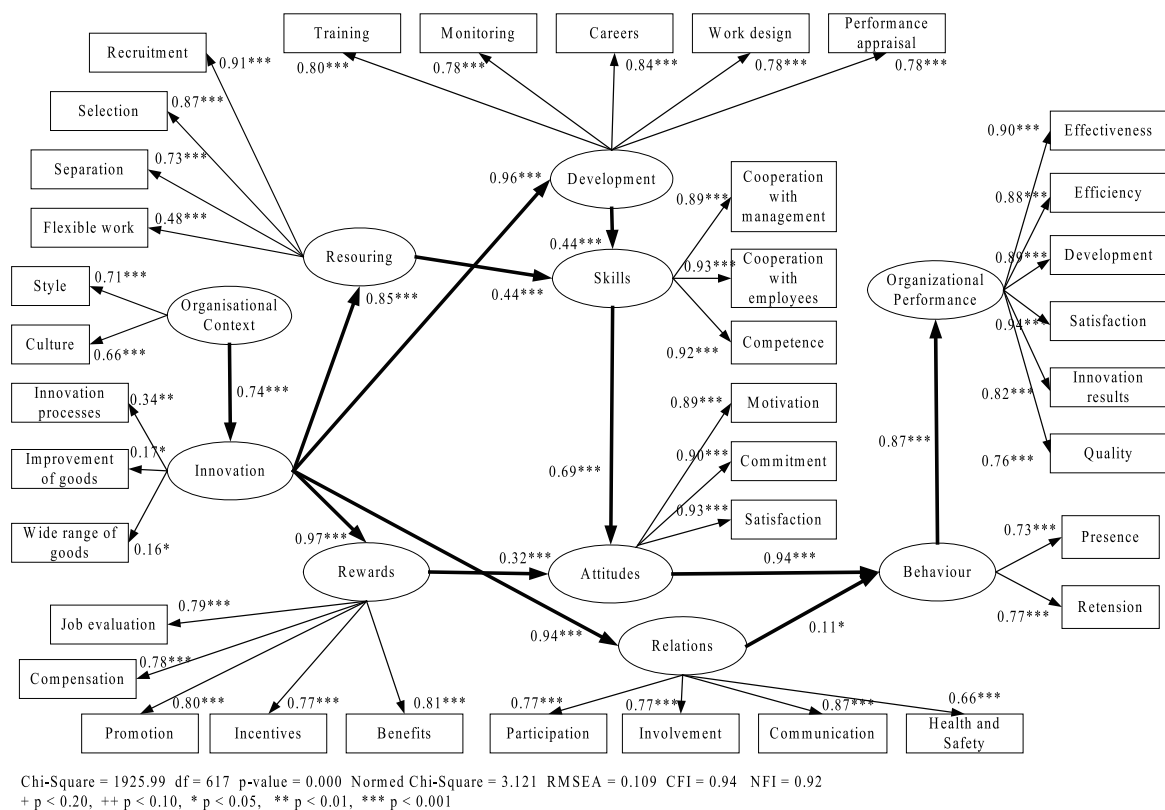


Figure 3: Estimation results of the contingency model

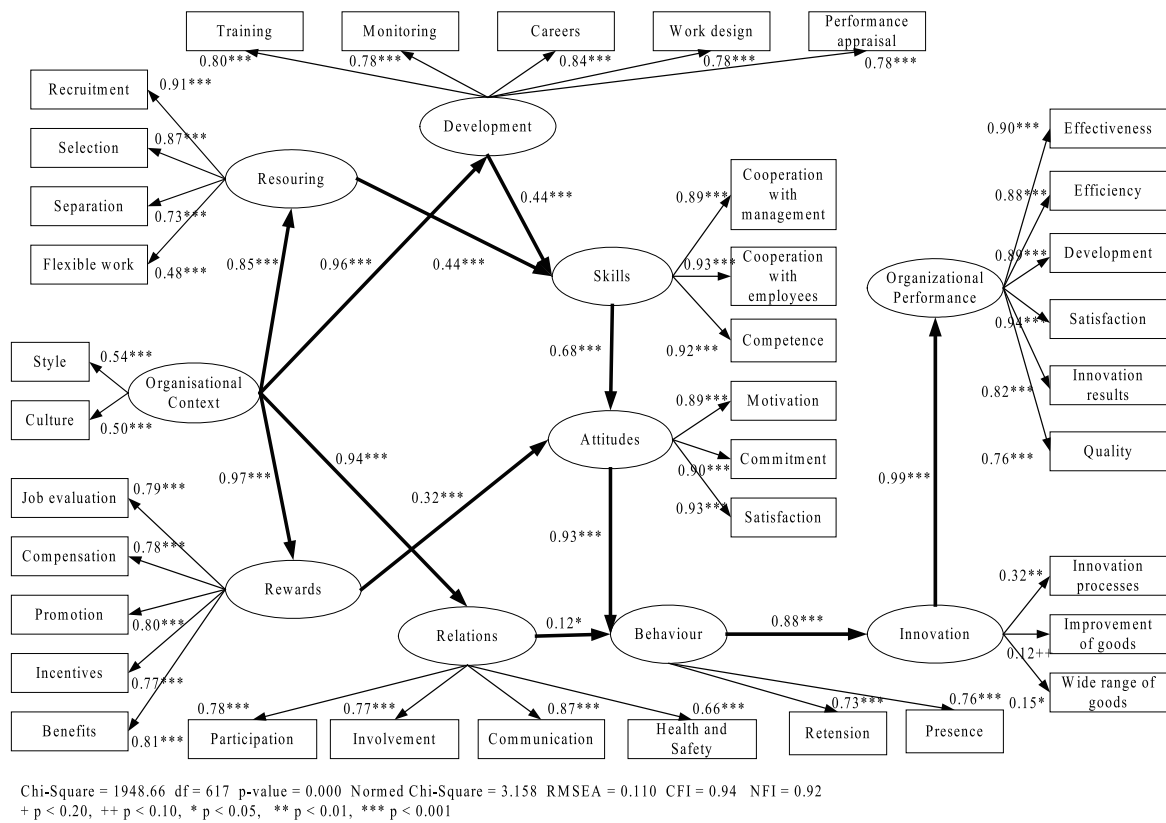


Figure 4: Estimation results of the reciprocal contingency model

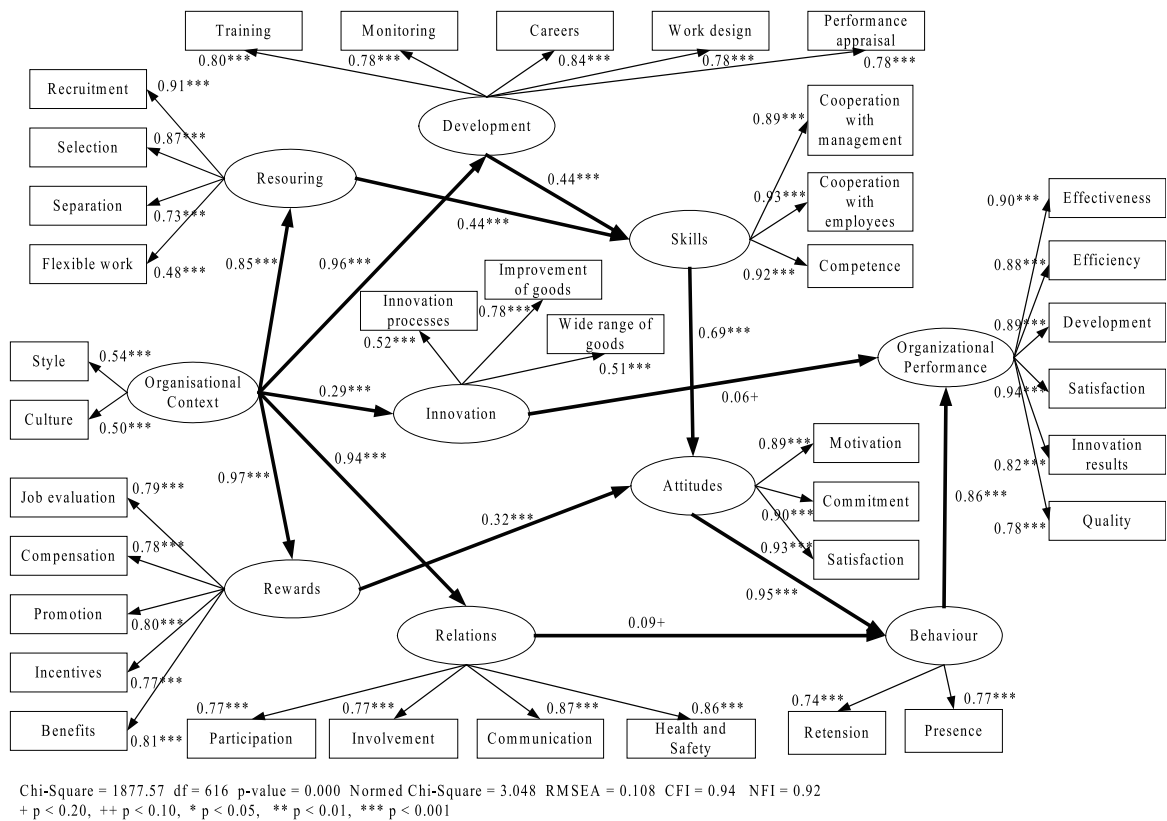


Figure 5: Estimation results of the universalistic model

med fit index (NFI). The path diagrams for the estimated Innovation-HRM-Performance linkage models proposed in Figure 1, indicating all the causal relationships between the variables involved, are presented in Figures 3, 4 and 5 for the contingency, reciprocal contingency, and the universalistic model, respectively. In these figures the boxes represent exogenous or endogenous observed variables and the circles represent the related latent variables. The light arrows indicate the observed variables that constitute the related latent variable and the bold arrows indicate the structural relationships between the corresponding variables. The figures that are assigned to each arrow show the estimated standardised coefficients.

In view of the results for the contingency, reciprocal contingency, and universalistic models presented in Figures 3, 4, and 5 respectively, the statistics suggest that the estimated models possess a satisfactory degree of fit with the data. Furthermore, considering the significance of the estimated standardised coefficients of the structural equations, it is seen that the vast majority of the hypotheses for the three models are supported, and only hypotheses H6 and HU:3 for the universalistic model are not supported. However, comparing the results in Figures 3 and 4 it may be supported that the contingency model is preferable than the reciprocal contingency model, because the values of the Normed Chi-Square and the RMSEA of the contingency model are slightly smaller than the corresponding values of the reciprocal contingency model. Furthermore, the “improvement of goods” construct in the innovation latent variable in the reciprocal contingency model is significant at a 0.10 level, whilst the same construct is significant at a 0.05 level in the contingency model. The results in Figure 5 do not support the universalistic model, because the direct effects of innovation on organisational performance and employee relations on employee behaviour are not significant.

5 Discussion and Conclusions

In the present study we have adopted the structural equation modelling methodology, which is much more powerful than hierarchical or competing regression analysis, in investigating causal relationships between categorical variables. Furthermore, the proposed and tested conceptual innovation-HRM-performance linkage framework put some light into the ‘black box’ mediating innovation strategy and organisational performance, by also considering the moderating effects of organisational context variables such as managerial style and organisational culture. Thus, the contribution of this study is two-fold. First on the analytical level, adopting a more sophisticated method of analysis, and second on the conceptual level, introducing an innovation-HRM-performance linkage model.

Specifically, the study provides support for the contingency perspective. Analytically, Table 2 shows the direct, indirect and total effects of statistically significant relationships expressed in the tested contingency model. Results shown in Table 2 reveal that innovation strategy is

positively influenced by the ‘organisational context’ variable. This means that the more heavily decentralised the management style is, and the more fulfilment – oriented (i.e. emphasis on expertise and orientation toward the person) organisational culture is, the more positive is the influence of organisational context variables on innovation. Furthermore, although there is no any direct impact of organisational context on the other mediating variables of the model, total effects indicate that all variables are strongly and positively influenced by organisational context variables. This result seems to be very important because it reveals that the internal environment of the organisation influences innovation strategy, the HRM policies, the HRM outcomes, and organisational performance (Murphy & Southey, 2003). Moreover, it is worth mentioning that the variables of employee retention and presence fit into the model, supporting the findings of other researchers such as Boselie, Paauwe & Jansen (2001) and Fey et al. (2000), who advocate that they affect organisational performance. With respect to the latent variable of ‘organisational performance’ it is seen that all the variables used to constitute this construct fit properly into the model.

It is seen in Table 2 that behaviour is strongly and positively related to attitudes. This direct relation between attitudes and behaviour (0.94) is transferred to organisational performance, depicted by the total effect of behaviour on performance (0.87) that is almost equal to the total effect of attitudes on performance (0.82). This result supports the job performance theory, advocating that it is employee’s attitudes that have an impact on the behaviour of employees that subsequently has an impact on organisational performance (Wright et al., 2003). The policies of resourcing and development provided an equivalent direct effect (0.44) on skills, which subsequently it is translated to increased organisational performance (0.25) through attitudes and behaviour. Similarly, the policies of rewards and relations provided direct effects on attitudes (0.32) and behaviour (0.11) respectively, which subsequently they were translated to increased organisational performance (0.26 for rewards and 0.10 for relations) (Wright et al., 2003).

Moreover, the results shown in Table 2 reveal that organisational performance is positively influenced (0.79) by innovation strategy. This result verifies findings of Jimenez-Jimenez & Sanz-Valle (2005) and Zhao & Liu (2006). Considering that the loading factor of the innovation processes construct is double in size than the loading factors of the other two constructs, it means that innovation processes have a more influential role in determining organisational performance than improvement and wide range of goods. Furthermore, the results shown in Table 2 reveal that innovation directly and positively affects resourcing (0.85), development (0.96), rewards (0.97), and relations (0.94). It is worth noting that innovation indirectly and positively influences behaviour (0.91), attitudes (0.86), and skills (0.80), indicating thus that the further from organisational performance the HRM outcomes are the lower their influence on organisational performance.

Table 2: Standardised total, direct and indirect effects

Descriptions		Direct effects	Indirect effects	Total effects
Organisational context	• Organisational performance	0.00	0.59	0.59
Organisational context	• Behaviour	0.00	0.67	0.67
Organisational context	• Attitudes	0.00	0.63	0.63
Organisational context	• Skills	0.00	0.59	0.59
Organisational context	• Resourcing	0.00	0.63	0.63
Organisational context	• Development	0.00	0.71	0.71
Organisational context	• Rewards	0.00	0.72	0.72
Organisational context	• Relations	0.00	0.70	0.70
Organisational context	• Innovation	0.74	0.00	0.74
Behaviour	• Organisational performance	0.87	0.00	0.87
Attitudes	• Organisational performance	0.00	0.82	0.82
Attitudes	• Behaviour	0.94	0.00	0.94
Skills	• Organisational performance	0.00	0.56	0.56
Skills	• Behaviour	0.00	0.64	0.64
Skills	• Attitudes	0.69	0.00	0.69
Resourcing	• Organisational performance	0.00	0.25	0.25
Resourcing	• Behaviour	0.00	0.28	0.28
Resourcing	• Attitudes	0.00	0.30	0.30
Resourcing	• Skills	0.44	0.00	0.44
Development	• Organisational performance	0.00	0.25	0.25
Development	• Behaviour	0.00	0.29	0.29
Development	• Attitudes	0.00	0.30	0.30
Development	• Skills	0.44	0.00	0.44
Rewards	• Organisational performance	0.00	0.26	0.26
Rewards	• Behaviour	0.00	0.30	0.30
Rewards	• Attitudes	0.32	0.00	0.32
Relations	• Organisational performance	0.00	0.10	0.10
Relations	• Behaviour	0.11	0.00	0.11
Innovation	• Organisational performance	0.00	0.79	0.79
Innovation	• Behaviour	0.00	0.91	0.91
Innovation	• Attitudes	0.00	0.86	0.86
Innovation	• Skills	0.00	0.80	0.80
Innovation	• Resourcing	0.85	0.00	0.85
Innovation	• Development	0.96	0.00	0.96
Innovation	• Rewards	0.97	0.00	0.97
Innovation	• Relations	0.94	0.00	0.94

In terms of mediation we found that skills, attitudes, and behaviour serially mediate the relationship between HRM policies and organisational performance. This finding coincides with Delery & Doty (1996) who argued that HRM policies influence organisational performance by creating a workforce that is skilled and has the right attitudes and behaviour. It also partially supports Guest (2001) for satisfaction and commitment, Boselie et al. (2001) for satisfaction and motivation, Horwitz (1999) for obtaining competencies in an ever-expanding collection of skills, and Paul & Anantharaman (2003) for competence and commitment, arguing that these HRM outcomes affect organisational performance. Furthermore, our results support Purcell, Kinnie, Hutchinson, Rayton, & Swart (2003) who advocate that employee commitment and motivation are important mediators between training and firm performance.

Furthermore, in terms of mediation we found that HRM policies mediate the relationship between innovation and organisational performance. However, it is worth mentioning here that although Becker & Gerhart (1996)

have identified only three HRM policies that influence organisational performance to be common among various empirical studies, we decided to include in this study as many HRM policies as possible, considering that the proposed research model is tested for the first time in the Greek context using structural equation modelling. Employing the factor loadings of the HRM policies of the estimated contingency model presented in Figure 3 we may make inferences concerning the fit between innovation strategy and HRM policies. Thus, from the resourcing latent variable it is seen that recruitment (0.91) and selection (0.87) have the highest loadings, in contrast with flexible work contracts that have the lowest loading (0.48). This result may support the findings of Raghuram & Arvey (1994) who found that there exists a fit between innovation and recruitment and the result of Storey, Quintas, Taylor, & Fowle (2002) who found that there is no fit between innovation and flexible work contracts. With respect to the training and development latent variable it is seen that training (0.80) and careers (0.84) have the highest loadings, although the loadings of performance appraisal,

work design, and monitoring training are also high (0.78). This result may support the findings of Ding & Akhtar (2001), Mark & Akhtar (2003) and Zhao & Liu (2006) who found that training fits with innovation, the result of Petroni (1999) who found that broad career paths maintain innovation, and the result of Mark & Akhtar (2003) who stress the importance of performance appraisal in innovation. With respect to the rewards latent variable it is seen that benefits (0.81) and promotion (0.80) have the highest loadings, although the loadings of job evaluation (0.79), compensation (0.78), and incentives (0.77) are also high. This result may support similar findings of Laursen (2002) and Laursen & Foss (2003). With respect to the relations latent variable it is seen that communication (0.87) has the highest loading, although the loadings of participation (0.77), and involvement (0.77) are also high. This result may support similar findings of Damanpour (1991) for communication, and Damanpour (1991), Hurley & Hult (1998), and Mark & Akhtar (2003) for participation and involvement.

Summarising, we may say that although past research has demonstrated that there exists a relationship between innovation strategy and organisational performance (Damanpour & Gopalakrishnan, 1998; Jimenez-Jimenez, & Sanz-Valle, 2005), it has neglected to investigate the mediating mechanisms, usually called the "black box", through which HRM policies are hypothesised to affect organisational performance (Gerhart, 2005). The results of this study support that innovation strategy positively affects organisational performance of Greek manufacturing companies. Specifically, the relationship between innovation and organisational performance, is serially mediated through the HRM policies of resourcing, training and development, rewards, and relations, the HRM outcomes of skills, attitudes and behaviour, and is moderated by organisational context. Moreover, there is a fit of innovation strategy with the HRM policies of recruitment, selection, training, careers, monitoring training, work design, performance appraisal, benefits, promotion, job evaluation, compensation, incentives, communication, participation, and involvement.

The conclusions above, nonetheless, should be treated with caution. This is mainly because a single respondent from each organisation provided information on innovation strategy, HRM policies, HRM outcomes, organisational context, and perceived measures of organisational performance, respondent bias may have set in the form of upward or downward reporting of the measures (Katou & Budhwar, 2007). In spite of such limitations, the study makes some important contributions. It tests theoretical assumptions in smaller firms and in a non- USA/UK context. It provides support to the fit perspective between innovation and HRM, and the mediation perspective. The study supports for the use of HRM policies, and HRM outcomes as mediating variables between innovation and organisational performance.

Considering the limitations of the study we may propose paths for future research. Specifically, in this study we tried to explore the question of causality using cross-

section data. However, causality can only really be tested with data collected at different points in time. Thus, the field would greatly benefit from some time-series or longitudinal studies in the future (Katou & Budhwar, 2006). Further, considering the pace of globalisation and competition, there is a strong need for investigating whether innovation strategy fits with specific HRM policies that allow organisations to improve their performance (Jimenez-Jimenez, & Sanz-Valle, 2005).

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Inoviranje in management človeških virov: Grški primer

Cilj tega prispevka je raziskava načinov, ki vodijo od inovacije do organizacijske učinkovitosti s pomočjo modeliranja s strukturno enačbo. To analitično orodje smo še prav posebej uporabili za testiranje raziskovalnega okvira, ki ga predstavlja vrsta vzročnih odnosov med organizacijskimi možnostmi, inovacijami, politikami managementa človeških virov (viri, usposabljanje, nagrajevanje, odnosi), rezultati managementa človeških virov (veščine, drža, obnašanje) in organizacijsko učinkovitostjo. Z uporabo podatkov organizacij, ki poslujejo v grškem proizvodnem sektorju, smo prišli do rezultatov, ki kažejo, da obstaja pozitiven učinek inoviranja na organizacijsko učinkovitost. Ta je posredovan prek politik in rezultatov managementa človeških virov, a je ublažen v organizacijskem kontekstu (stil managementa, organizacijska kultura).

Ključne besede: strategija inoviranja, politike managementa človeških virov, vzročnost, modeliranje s strukturno enačbo, grška proizvodnja

How Public Relations Impact on a Company's Effectiveness

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The role of public relations is dealing with the identification of organization's strategic public and developing communications programs for building solid, open and trusting relations with them. Many companies have taken a limited view of the impact that public relations can have on company's overall effectiveness. This paper consists of two parts: the theoretical framework for the role of public relations in the overall effectiveness of the company and an empirical analysis based on the primary data collected. We classified and analyzed different public relations factors (i.e. factors related to managing and implementing public relations) that influences the effectiveness of the company. We explored the correlation between public relations and a company's effectiveness and argued that public relations factors play a critical role in that effectiveness. We used linear regression and we found a significant linear relationship between the independent variable (public relations) and the dependent variable (company effectiveness).

Key words: Public relations, Public relations function, Company's effectiveness, Public relations strategy, Public relations agency

1 Introduction and theoretical backgrounds

Any company can develop a public relations program regardless of their public relations budget or number of staff. The key to implementing a successful program is to incorporate measurements and analysis from the beginning. Overall measurement of public relations programs should provide a holistic view of public relations compares with corporate goals and objectives. The company's effectiveness as a philosophy and as a result of communication activities has been explored by innumerable authors (McArthur and Griffin, 1997; Schultz and Kitchen, 1997; Low, 2000; Pickton and Broderick, 2001; Završnik and Jerman, 2006). Company effectiveness and related performance is a robust and ongoing necessity for business. Have companies become so good at implementing public relations to achieve effectiveness? Moreover, an even more important issue concerns the ability of public relations to connect effectively with key stakeholders who could impact on organisational performance.

Public relations make an organization more effective when it identifies strategic constituencies in the environment and then develops communication programs to build long-term, trusting relationships with them. Partici-

pation in strategic management provides the integrating link for public relations to enhance organizational effectiveness. To provide its unique contribution, however, public relations must be separate from other management functions. However, communication programs should be integrated or coordinated by a public relations department and they should have a matrix arrangement with the other departments it serves.

There is ample evidence that the century-long domination of mass media advertising and advertising agencies in marketing communications is coming to an end. Marketing budgets are being shifted away from traditional advertising to behaviour-oriented disciplines such as consumer promotion, direct marketing and direct-response advertising (Nowak and Phelps, 1994).

They have always known that public relations - in the form of trade and business media relations, case histories, thought-leadership campaigns and industry conferences - deals effectively with hard news and detailed information. What is new, however, is the emerging power of public relations to drive the marketing communications machine, especially when the core message is value. Smart marketers will examine how their competitors publicize their accomplishments, what messages they deliver, which statistics they cite and which influences advocate their po-

sitions - and then incorporate that information into their public relations strategy (Shadle, 1998).

As with many aspects of our society, the pace of change in public relations has been increasing in the recent decades. Some of the changes over the last decade are continuations of trends that began earlier. Beginning in the 80's, many corporations drastically reduced their in-house public relations staff and began using outside agencies more. Public relations consulting has expanded considerably and the largest agencies have grown even larger (Stevens, 2001: 19).

Grunig and Hunt suggested a useful way of looking at public relations history. They suggested the four models of communicational relationships with the public: press agency/publicity model, public information model, two-way asymmetrical model and two-way symmetrical public relations. The press agency/publicity model is the kind of activity that people associate with public relations. The aim of this type of model is to secure coverage for a client. The public information model provides information for people, doesn't seek to persuade the audience and tends to rely on one-way communication. Two-way asymmetric public relations introduce the idea of two way communication, but only asymmetrically because the intended change is in the audience's attitudes rather than the organization's practices. Two-way symmetrical public relations is a the more equal communication, where each part is willing to alter their behaviour (Theaker, 2001).

Today's public relations industry can be described as a mature profession in which practitioners and academics work together to better understand the role of public relations and to debate and clarify the many practical and philosophical issues that arise when defining the relationship between an organisation and its public. At the same time, public relations practitioners, armed with output from academia, actively engage with dominant coalitions in a range of organisations to position public relation as a strategic management discipline and to contribute positively to the achievement of organisational goals while being sensitive to the aspirations of the relevant publics (Ferjan, 2002; Moncur, 2006).

The use of contemporary public relations in Slovenia can be traced back to the 1960s, which was the "liberal" period in the communist Yugoslavia. The first public relations agency was established in the 1989 and 10 practitioners formed the Public Relations Society of Slovenia (PRSS) in the 1990. In the 1993, the PRSS became a full member of the European confederation of public relations society. In the 2000, the PRSS (the Slovenian board of IPRA) endorsed by the PRSS celebrated its 10th anniversary (Sriramesh and Verčič, 2003).

2 Public relations as vital component for company's effectiveness

Lots of different systems have been invented for competitive reasons, each claiming to be a better form of public relations measurement. Public relations program evaluation plays a significant role in demonstrating effectiveness (Dozier, 1990; Fairchild, 2002), and organizational impact (Radford and Goldstein, 2002). As there is no method for measuring effectiveness, practitioners select from an array of different methods and models to demonstrate their effectiveness. Evaluation models can be categorized into those focusing on a specific public relations process, such as media evaluation, or those accommodating an integrated planning approach or impact model (Xavier et al., 2005).

Broader outcome measures concern whether audience target groups actually receives the messages directed at them, were aware of the message, understood it, retained and even acted upon its meaning. There is a debate as to whether the communication materials and public relations expertise result in opinion, attitude and/or behaviour changes among target publics (Phillips, 2001).

A lot of research about the measure of reputation has been done by the academics. They have explored the relationship between reputation and commercial performance. The Reputation Institute¹ has tackled the measurement of reputation and provides some interesting benchmarks.

Based on a number of published lists of the most admired companies, six sets of criteria or themes have been identified that appear to dominate the construction of the reputation rating published by social monitors (Phillips, 2001; 228-229): (1) financial performance, (2) product quality, (3) employee treatment, (4) community involvement, (5) environmental performance and (6) organizational issues.

Integrated marketing analysis also includes public relations return on investments. A statistical model permit public relations to understand how media coverage interacts with advertising, promotions and other forms of marketing communications to affect awareness, brand loyalty and sales (Weiner, 2000).

Other public relations performance measurements can derive from how public relations is managed. Senior public relations professionals participate in the strategic decision processes of an organisation and counsel other managers participating in that process about the consequences of potential decisions for the public. In effect, they bring the voices of the public into strategic decision making by researching and listening to the public before decisions are made. Excellent public relations departments then strategically plan, administer and evaluate

¹ The Reputation Institute is a private research organization <http://www.reputationinstitute.com/sections/who/who.html>

public relations programmes to communicate with these publics, both before and after management decisions are made, so that the organisation can build and maintain good, long-term relationships with them (Grunig and Grunig, 2002).

Excellent public relations units do not under-emphasise the traditional technical skills of public relations - such as writing and preparing materials for the media and publications, writing speeches, working with the media or developing audio-visual materials and websites. Public relations departments must serve a managerial role as well as a technical role in their organisations. Public relations units play an important role in the strategic management of their organisations. They identify critical publics that affect or are affected by management decisions and who can create issues and crises for the organisation (Grunig and Grunig, 2002).

If public relations is to progress as a strategic management discipline, it is essential that it links to both the wider organisational strategies and to the wider domain of business studies. From observation, this kind of public relations is seldom seen by dominant coalitions as a strategic management discipline and public relations is ignored in business studies literature. A systems theory approach is applied to develop a framework in which public relations strategy is intrinsically linked to the various levels of business strategy (Moncur, 2006: 97).

3 Research questions and methodology

3.1 The purpose of the research

The main thrust of the paper concerns public relations factors affecting company effectiveness, which can be viewed as a factor related to managing and implementing public relations.

3.2 Hypothesis

The dominant proposition of this paper is that public relations may be playing a greater role in terms of emphasis in corporate performance and effectiveness. Empirical evidence will be presented supporting this enhanced role within a company's effectiveness level. Accordingly, we make the following hypothesis:

H: There is a correlation between public relations and company effectiveness.

3.3 Variables

For the purposes of our research, the following measures for constructs were developed, drawing on the conceptual work in the context of public relations and company effectiveness.

Public relations description

The public relations scale covers the following statements: the primary function of public relations is to increase the company's reputation, the public relations office takes part in the strategic decisions in our company, the public relations office holds consultation with the managing board or the top management of our company, we are planning all public relations activities in our company and public relations build and manage relationships with the company's strategic publics. The public relations construct consists of interval scale questions. Answers were given on a Likert-scale format (7= *I strongly agree* and 1= *I strongly disagree*). The reliability of the construct was assessed using a Cronbach alpha reliability coefficient. The measure had 9 items and reported an Alpha of 0.8629.

Company effectiveness description

The company effectiveness construct can be operationalized in different ways. Many authors agree that public relations has an impact on company's effectiveness (McArthur, Griffin, 1997; Schultz and Kitchen, 1997; Low, 2000; Pickton and Broderick, 2001). We used a multi-item measure containing eleven items to investigate company effectiveness in the areas of financial, marketing and other types of company effectiveness (Churchill, 1979). This variable was composed of three types of company effectiveness: market, financial and other types. We calculated the mean score for each type as a sum of all the mean score averages. The company effectiveness construct consists of interval scale questions. Answers were given on a Likert-scale format (7= *I strongly agree* and 1= *I strongly disagree*). The concept of company effectiveness reported an Alpha of 0.8535.

Therefore, measurement scales for the public relations and company effectiveness constructs demonstrated a relatively high degree of reliability.

3.4 Data gathering and the characteristics of the sample

The main research instrument for the empirical investigation - e.g. the questionnaire - was developed based on the derived theoretical basis. The covering letters accompanying the questionnaires were mailed to the corporate directors, marketing directors or directors of 1000 Slovenian enterprises. We choose the convenience sample. The survey was conducted in December, 2006 and January, 2007. A total of 200 useful responses were received and that gave a response rate of 20.0%. The results presented in this paper are related to the sample of 200 respondents. The collected empirical data were processed using SPSS 10.0, with an emphasis on descriptive statistical analysis.

The relevant data on the companies were mainly provided by the marketing directors (28.3% of cases), followed by company's directors (26.3%), members of the top management (18.7%), business consultants (9.6%) and head executives (6.1%). Members of the managing boards, heads of public relations offices and counselling

specialists provided 2.5%. Other respondents appeared in 3.5% of cases.

Company size was determined from the number of employees. The sample consists of 45.8% small companies, 31.9% middle sized companies and 32.3% large companies. The companies included in the sample are distributed according to industries as follows: 41% of the respondents belong to production oriented companies, 30% to service oriented companies and 24.5% were trade oriented companies. The sample also consists of 1.5% institutions, 0.5% government organizations and 2.5% of companies chose the answer »other«.

3.5 The research instrument

Both the constructs (e.g. public relations factors) and company's effectiveness were measured on a Likert scale. The respondents had to indicate their agreement with the statements on a 7-point Likert scales (1 = strongly disagree to 7 = strongly agree). Despite the fact that the Likert-type measure does not claim to be more than an ordinal scale, it has, nevertheless, been accepted as a means of achieving quality interval measurements and there are several arguments favouring all the different positions on this issue (Avlonitis and Papastathopoulou 2000).

4 Empirical findings

4.1 Public relations practice in Slovenian companies

One of the goals of our research was to find out if companies had developed its own public relations function. The data shows that 42.3% of companies are using external public relations agencies and the remaining 57.7% of companies have their own in-house public relations office.

When asked how many employees in the company deal with public relations, we received the following answers: In the largest share of companies (46.4%) the public relations activities are performed by 1 employee - followed by 25% of companies which have 2 employees. In 14.8% of cases, 3 employees work in the field of public relations and in the remaining 6.6% of companies, 4 employees performed public relations activities. The data presented in the research is confirming that public relations activities are performed in the companies, though the public relations function is organized as a separate department or as part of the marketing or sales department.

When asked which department performed the external communication functions in their companies, respondents give the following answers: the public relations department (3%), the marketing or sales department

Table 1: Mean scores of the statements on public relations

Statements on public relations	Mean scores	SD
The primary function of public relations is to increase the company's reputation.	5.93	1.44
Top management of our company has complete trust in the public relations strategy of our company.	5.73	1.30
The public relations strategy arises from the corporate business strategy.	5.57	1.30
The public relations office holds consultation with the managing board or the top management of our company.	5.43	1.98
Public relations build and manage relationships with the company's strategic publics.	4.90	1.92
Public relations implementation is centralized in our company.	4.88	1.91
Control of public relations activities is centralized in our company.	4.79	1.85
We are planning all public relations activities in our company.	4.76	1.92
The public relations office takes part in the strategic decisions in our company.	4.51	2.12

Table 2: The mean scores regarding the different types of company effectiveness

Type of company effectiveness	Mean scores	SD
Other types of company effectiveness	5.04	1.22
Market effectiveness	4.91	1.40
Financial effectiveness	4.47	1.50

(42%), no department because the president of the managing board or director attends to this personally (25%), and nobody (30%).

The respondents also indicated that in 61.2%, the total communications budget goes towards marketing communications and the remaining 38.8% goes towards public relations.

4.2 The impact of public relations on company effectiveness

For each statement on public relations, the average value and the standard deviation have been calculated. The re-

sults in Table 1 show that the mean scores achieved for the public relations statements are 4, 5 and more, so we can conclude that the respondents agree with the statements on public relations. The standard deviation results show that many scores are on the interval between 1.30 and 2.12 from the mean.

The results in Table 2 show that the mean scores of the different types of company effectiveness are in the interval between 4.50 to 5.04. And also the standard deviation results show that many standard deviation scores are achieved on the interval between 1.22 and 1.50 about mean.

One of the objectives of the paper concerns the correlation between different statements of public relations

Table 3: Correlation matrix between public relations and company's effectiveness

Company's effectiveness measure	Correlation	
	r	p
Top management of our company has complete trust in the public relations strategy of our company.	0.378(**)	0.000
The public relations strategy arises from the corporate business strategy.	0.384(**)	0.000
The control of public relations activities is centralized in our company.	0.326(**)	0.000
The public relations implementation is centralized in our company.	0.225(**)	0.000
The primary function of public relations is to increase the company's reputation.	0.263(**)	0.000
The public relations office takes part in strategic decisions in our company.	0.222(**)	0.002
The public relations office holds consultation with the managing board or the top management of our company.	0.245(**)	0.001
We are planning all or public relations activities in our company.	0.361(**)	0.000
Public relations build and manage relationships with company's strategic publics.	0.279(**)	0.000

** The correlation is significant at the 0.01 level (2-tailed).

and the company's effectiveness. Accordingly, we build the hypothesis as follows:

Null hypothesis H_0 : There is no correlation between public relations and the company's effectiveness.

Alternative hypothesis H_1 : There is a correlation between public relations and the company's effectiveness.

The test statistic presented in Table 3 exceeds the critical value so we reject the null hypothesis and conclude that there is indeed a significant correlation between all the tested public relations statements and company effectiveness.

Because the pair-wise correlation is found to be significant, the relationship between the variables will be investigated by producing a regression model in the form of a linear equation. The independent variables (public relations statements) have been constructed on the basis of questionnaire items that detect the distinct potential impact on company effectiveness. It is important to note that all the variables have been measured on a seven-level Likert scale. For each independent variable, the average value and the standard deviation have been calculated.

We would like to test if the regression model with one predictor variable (e.g. public relations) is significantly related to the criterion variable Y (e.g. company effectiveness)? We test the equivalent null hypothesis that there is no correlation in the sample between the dependent and independent variables, but we found a significant level in the impact of public relations on the company's effectiveness. According to this, the null hypotheses that we tried to reject using regression analysis, could be formulated as follows:

Null hypothesis H_0 : There is no correlation between the dependent and independent variables, e.g. The correlation

coefficient between the dependent and independent variables equals 0 ($H_0: R_{xy} = 0$).

Alternative hypothesis H_1 : There is a positive correlation between the dependent and independent variables, e.g. The correlation coefficient between the dependent and independent variables is significantly higher than 0 ($H_1: R_{xy} > 0$).

For the correlation tested, we selected the regression model with the highest significance, i.e. the model with a significance closest to the significance level of 5%. To investigate the hypothesis, entering all the variables in a single block, we found that the proposed model explains a significant percentage of the variance in company effectiveness. Table 4 shows that 17.4 per cent of the observed variation in company's effectiveness is explained by the one independent variable i.e. public relations ($R^2=0,170$; adjusted $R^2=0,174$).

Although the empirical results do not provide a high level of support for the conclusion, we believe that the positive correlation between public relations and the effectiveness of its company can be still accepted on the basis of the available data. Such a result is in accordance with the findings of other authors (Spanos, 2001).

The results in Table 5 indicate that we can reject the null hypotheses that the coefficients for customer service ($Beta = 0.417$, $t = 6.455$, $p = 0,000$) are 0. The beta weight ($Beta = 0.417$) shows that public relations has a significant influence on a company's effectiveness.

4.3 Managerial implications

We have argued and documented empirically that public relations has a significant impact on a company's effectiveness.

Table 4: The correlation between public relations and company effectiveness

Independent variable (x)	Dependent variable (y)	R^2	Adjusted R^2	Model	(Sign.) α
Public relations	Company's effectiveness	0.174	0.170	Lin: $y = 3,340 + 0,331x$	0,000

Table 5: The results of regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3,340	0,273		12,222	0,000
Public relations	0,331	0,051	0,417	6,455	0,000 ^a
^a Dependent variable: Company's effectiveness					

veness in the sample of Slovenian companies. Additionally, each company may choose to have a unique public relations strategy but should consider its unique characteristics when developing successful public relations programs. We identified these characteristics as public relations factors that can affect the company's effectiveness. Knowing these characteristics when developing public relations programs can provide competitive advantages. This article examines the important contribution that public relations practice provides for a company's overall effectiveness. And finally, with public relations we are able to improve the company's productivity, achieve high quality services and products and, consequently, these will lead to overall effectiveness of the company.

5 Conclusion

The purpose of this paper is to provide additional insight into some of the theoretical and managerial issues surrounding the design, implementation and evaluation of public relations programs in the changing environment. We approach this task from the organizational point of view - primarily from the perspective of how a company's effectiveness is affected by public relations. The paper consists of two parts: the theoretical framework for the role of public relations in the overall effectiveness of the company and the empirical analysis, based on the primary data collected. This paper presents the results of a study that examines the factors of public relations affecting effectiveness in the sample of Slovenian companies.

Next, we discuss the development and current status of the public relations profession in Slovenia. Public relations consulting has expanded considerably and the largest agencies have only grown even larger. Data shows that 42.3% of companies are using external public relations agencies and the remaining 57.7% of companies have their own in-house public relations office. Therefore, we add that an integrated marketing communications program should be coordinated through the broader public relations function.

This study helps explain the impact of public relations on the company's effectiveness. Managers in the responding companies assessed the public relations issues in their companies and their impact on the company's effectiveness. The study confirms that there is an association between all the statements on public relations and the company's effectiveness. A statistical test supported the hypothesis that a positive correlation exists between public relations and company effectiveness. With the statistical test, we can confirm a positive correlation between public relations and company effectiveness and we can suggest that public relations does influence the company's effectiveness.

This paper provides a perspective of how to analyze the factors affecting the overall company effectiveness. The guidelines that emerge from this approach should be particularly relevant for public relations managers in industry.

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Kako odnosi z javnostmi vplivajo na učinkovitost podjetij

Vloga odnosov z javnostmi je identifikacija strateških javnosti organizacij in oblikovanje komunikacijskih programov za graditev stabilnih, odprtih in zaupanja vrednih odnosov z njimi. Kakovost teh odnosov je pomemben kazalec dolgoročnega prispevka odnosov z javnostmi k organizacijski uspešnosti. Mnoge organizacije se zelo malo ukvarjajo z vplivom odnosov z javnostmi na celotno učinkovitost same organizacije. Naš prispevek je razdeljen na teoretični in empirični del. V teoretičnem delu predstavljamo spremenljivke odnosov z javnostmi, ki vplivajo na uspešnost organizacije. S pomočjo empirične raziskave na vzorcu slovenskih podjetij smo ugotavljali odvisnost uspešnosti podjetij od posameznih dejavnikov odnosov z javnostmi. Raziskali in analizirali smo različne dejavnike odnosov z javnostmi (t.j. dejavnike povezane z upravljanjem in izvajanjem odnosov z javnostmi), ki lahko pomembno vplivajo na učinkovitost organizacij. Ugotavljali smo korelacijo med njimi ter s pomočjo linearne regresije ugotovili statistično značilno korelacijo med neodvisno spremenljivko (odnosi z javnostmi) in odvisno spremenljivko (uspešnost organizacije).

Ključne besede: odnosi z javnostmi, funkcije odnosov z javnostmi, učinkovitost podjetja, strategije odnosov z javnostmi, agencije za odnose z javnostmi

Corruption in Public Administration Units and Organizational Measures to Prevent and Fight Corruption¹

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This paper presents the results of a study that investigated the attitudes of civil servants in public administration units in Slovenia regarding corruption at work. The results show that civil servants employed in public administration units take corruption seriously. The employees' perceptions of corruption and their willingness to report the offender are closely connected to their opinion on how others - their colleagues - perceive it (i.e., how serious they find corruption and whether they are willing to report the offender). There are important gender differences regarding the perceptions of corruption, as well as differences in the function they have and their membership in organizational units. The authors conclude that it is necessary to develop and strengthen the feelings of the employees' security and increase the link between perceiving corruption and one's own judgment of the seriousness of corruptive behaviour, as well as to decrease the tolerance regarding corruption.

Key words: administrative corruption, corruptive behaviour, code of silence, anticorruptive measures, offender, management, civil servant, public administration unit.

1 Introduction

The phenomenon of corruption is present in Slovenia. According to some authors (e.g., Tratnik Volasko, 1999), Slovenia is considered to be one of the less corrupted Eastern European countries. Nevertheless, the question remains: is that consistent with the truth? There have been very few research studies done in the field of corruptive behaviour and there have been even fewer studies conducted with regard to administrative corruption. Corruption in Slovenia needs to be researched more and in detail and any possible defects and deficiencies in political, economic, legal and other systems should be determined. Administrative corruption is not the problem of an individual - it is an organizational problem for each and any organization. The management needs to be trained and qualified in order to take correct preventive measures so that corruptive behaviour does not occur and, if it has occurred, they need to be efficient in dealing with the consequences.

The definition of the term corruption differs considerably around the world. Some researchers consider it in a broader and others in a narrower sense. It is the same

when it comes to considering the term corruption among countries. That is why it is difficult, if not impossible, to compare the data of different countries and their research. Great caution is needed when it comes to such comparison and it is important to determine what the term corruption actually means when we present certain data.

In the Civil law convention on corruption, the term corruption is defined as a »direct or indirect claim, offering, gift or acceptance of a bribe or any other illicit benefit or promise which disturbs the correct performance a duty or treatment required by the receiver of the bribe, illicit benefit or a promise.« (2003, p. 634).

Haberfeld, Kutnjak Ivkovich, Klockars and Pagon (1999) and Pagon and Lobnikar (2001) stress that corruption needs to be understood in its original, natural meaning (depravity, perversity, dishonesty). Authors Haberfeld et al. state that corruption is very difficult to detect and is even more difficult to prove. It is characteristic of a corruptive relationship that there is no impaired party that would feel the need to report an offence. That is why detecting and ad-ducing evidence to prove corruption is an extremely difficult task. In this article, corruption is understood as defined in the Civil law convention on corruption (2003).

¹ The article is based on the master's degree thesis, which was successfully defended by Andrejka Mevc under the supervision of Dr. Milan Pagon at the Faculty for Organizational Sciences of the University of Maribor.

Electronic databases were checked (PsycINFO Database, NCJRS Abstracts Database, Academic Search Premier Database, Social Science Research Database) but studies dealing with the narrow topic of administrative corruption on a local level or are comparable with administrative corruption in public administration units were not found. There are no studies we know of dealing with corruption in public administration units in Slovenia. Jager (2001) states there were three known international victimological studies (1992, 1997 and 2001), an international research on ethics in business and three studies dealing with corruption in the police force.² All of them were carried out between 1992 and 2002. In the Slovenian police force, the factors of deviant, antisocial behaviour were researched by Lobnikar, Pagon, Duffy and Ganster (2000) as well as Lobnikar, Pagon and Ovsenik (2004). In their papers, they did not deal with directly corruptive behaviour but with broader forms of deviant behaviour on the part of Slovenian police officers: deviant behaviour towards other employees, deviant behaviour to gain benefits for themselves and deviant behaviour towards organizational rules, as well as the frequency and causes of violence and three forms of aggressive behaviour at work in Slovenian police force: aggression, violence and revenge. The results show that deviant behaviour is influenced by interpersonal and organizational factors, followed by the personal characteristics of individuals and, at the lowest level of the scale, are demographic factors of the employees. According to gender, malicious rumours about females spread twice as much as those about males. General studies on corruption in the private sector were financed by the previous Office for the prevention of corruption of the Republic of Slovenia and the present Committee for the prevention of corruption. Public opinion studies on corruption have regularly been carried out over the last five years, since 2002 (University of Ljubljana, Faculty for social sciences – Institute for social sciences, the Centre for public opinion and mass communication, 2002, 2003, 2004 and 2006, Aragon d.o.o., 2006). Accepting a bribe in public services is shown as »the utmost visible and characteristic« pointer of corruption. The opinion on corruption in public services is mainly formed by media reports and, to a small extent, from personal experience with corruption. Throughout the years, the answers point to a relatively low spread of corruption in Slovenia but it tells us nothing about the relative corruption in particular segments and it does not consider the »systematic exclusiveness« of the majority of respondents. Evaluation of the spread of corruption has been based on the media. Studies were carried out on corruption in the private sector (GfK Gral-Iteo, market studies d.o.o., 2002, 2004 and 2006). According to the Slovenian economists who took part in the research, there was evidently less corruptive behaviour in 2006 than in 2002. The opinion on corruption is based in general on small talk, as well as on the media

and various sources. The situation in the Slovenian economy has improved in comparison with two other measurements / surveys. The majority of companies believe that joining the European Union did not bring major changes for companies. They strongly believe that the situation of the particular branches has neither improved or deteriorated. According to the data from the research, corruption does not present such a significant problem as it did in 2004. Compared to the opinion from the research, the situation has improved and the public opinion of the range of corruption and bribe-taking in public services has also improved. Conviction of corruption among civil servants is not based on the media as in the previous studies, but more on experiences of those who the people questioned trust. The stated company (GfK Gral-Iteo, market research d.o.o., 2001 and 2004) did the research on corruption in Eastern and Central European countries. Also, in 2002, 2003, Transparency International carried out international victimological studies in Slovenia.

The results of the studies (Pavlović, 1998, Pavlović, 1999a, Pavlović, 1999b, Pavlović, 1999c, Urad vlade RS za statistiko, 1998) show that criminality in Slovenia ranges around the European average. Data on the corruptibility of officials exceeds the European average but they do not reach the level that would justify the agitation present in the media. Comparing the level of victimization and corruption, we have a slightly worse position than the other developed European countries but a better one compared to other transitory states in Central and Eastern Europe. Slovenian entrepreneurs know the basic ethical values that should take place in a free market but, being under economic and everyday pressure, they tend to use unethical »short cuts«. The problem of ethical treatment of management from the social psychological and communicological point of view is dealt with in the paper by Pagon and Lobnikar. They have found out that managers take wrong notions of the sense and use of ethics, the prevailing philosophical attitude towards the issues of ethics, lack of ethics education and training, and exaggerated emphasis on macro-ethical issues. Studies of police force corruption show that there are certain similarities and differences among the countries involved in the research. In general, American police officers showed less tolerance towards corruptive behaviour in comparison to Slovenian, Polish and Croatian police officers. (Haberfeld et al.)

2 Method

2.1 The aim of the research

The aim of the research was to establish how seriously civil servants in public administration units in Slovenia take

² The researches were carried out by researchers Habelfeld and coauthors; Kutnjak Ivkovich, Klockars, Lobnikar, & Pagon (2000); Kutnjak Ivkovich, Pagon, Klockars, & Lobnikar (2002). They researched police force corruption.

administrative corruption, the level of acquaintance with organizational regulations that deal with corruption, if there is a silence code and how strong it is in protecting civil servants who violate regulations and what the standpoints of civil servants are towards disciplinary measures in the workplace. On the basis of our findings, we suggest organizational measures to prevent and fight corruption in public administration units.

2.2 The sample

In our research we surveyed a population of civil servants from Slovenian public administration units. The sample consisted of 351 civil servants. The majority was represen-

ted by women (almost 82.0%) with secondary, high vocational or university education (together, 74.4% of those questioned) employed in administrative or technical posts (together, 84.9% of those questioned). On average, the respondents were middle aged (the average age was 42.7 years), with average work experience of 21 years and 15,5 years experience in public administration. The sample consisted of civil servants from 18 public administration units in Slovenia.

2.3 Instruments

A questionnaire was used in the research. We made use of a questionnaire used previously by Haberfeld et al.

Case 1	A member of the exam committee works in his free time as a driving instructor on the basis of a work contract in a driving school but not in the area of his exam centre. He only drives in his free time and never when he is at work.
Case 2	A civil servant in charge of economy routinely accepts perfume, coffee, a shawl, a candy box, a free snack, a bunch of flowers or other presents of low value from customers in the course of the proceedings. She never demands these presents and is careful not to abuse the generosity of people who bring the presents.
Case 3	In the course of a car maintenance check up, a car mechanic civil servant finds a few minor irregularities. He agrees with the owner of the car to ignore them in the record. In return, he receives a sum of money that amounts his daily pay.
Case 4	A civil servant responsible for public order is very popular in the area of a public administration unit where he works. Customers bring him presents of lower and higher value for Christmas, new year (calendars, notebooks, pens, food, drinks, even an expensive watch, necklace etc.)
Case 5	A civil servant in charge of procedures referring to lost and found objects has among these objects a watch worth two days pay. He doesn't show the watch in the public auction but takes it home instead.
Case 6	A referee for driving licences finds out that his friend who is employed in a tourist agency does not have a valid medical certificate which is needed to renew a driving licence. He urgently needs to go on a business trip and the referee extends his driving licence. In return, the referee gets a free weekend for two on the coast within this tourist agency.
Case 7	A civil servant in the reception office gets paid a tax of 5.000, 00 SIT by a customer who forgets to take the receipt and leaves it on the desk. A referee takes the receipt and does not register it at the end of the day. She keeps the money and destroys the receipt.
Case 8	A civil servant responsible for building permits makes a deal with an architect that he would direct the customers to him and in return he would get 5% of the value of each elaboration.
Case 9	A head civil servant demands that an employee grants a customer a licence for a gun even though the customer does not comply with the required conditions to obtain a licence. In return the employee gets a pay rise of 10%. Evaluate the work of the SUPERIOR civil servant.
Case 10	A civil servant granting licences for the usage of properties is very popular and respected at work for his kindness, experiences and excellent knowledge of procedures and regulations. A director can rely on him and trusts him, so he has full power even when it comes to decision making in civil administration procedure. He does his job autonomously and independently. There is a rumour though among the colleagues that sometimes he makes an exception and grants a permit to a customer who does not fulfil all the required conditions. In return he receives money or some other material benefit. There is no evidence that the rumour is consistent with the truth. A colleague later discovers that the referee really does grant licences in cases when conditions are not fulfilled. A superior knows nothing about it. The colleague keeps quiet and says nothing about what he has discovered. He does not inform the superior of his discovery.

Figure 1: Cases, used in the questionnaire

(1999). The questionnaire is comprised of a variety of factors – variables that we presumed were related to the opinions of civil servants referring to administrative corruption. The factors were classified as general and specific. The general factors are:

- membership of the inner organizational unit,
- gender,
- age,
- length of work experience,
- length of work in public administration,
- function at work,
- education.

The special factors are:

- inner perception of the seriousness of corruptive behaviours,
- perception of the seriousness of the corruptive behaviour of others (colleagues),
- opinion on violating organizational rules,
- opinion on the penalty deserved,
- opinion on the actual penalties,
- readiness to report an offender
- opinion on the readiness of others (colleagues) to report an offender.

The questionnaire presents 10 cases or scenarios (Figure 1). Respondents were questioned on what they thought and how they felt about the scenarios. The cases refer to the profitable activities of civil servants in their free time, accepting gifts, accepting a bribe, theft, taking provisions, the corruptive behaviour of superiors, the existence of a code of silence. In the second part of the questionnaire, we stated seven Likert type questions with five level scales and the respondents placed their answer on the scale between the two extremes.

2.4 Procedure

The questionnaire was tested on a sample of civil servants from the public administration unit in Velenje. The survey was carried out in public administration units in: Celje, Domžale, Jesenice, Kamnik, Krško, Ljutomer, Maribor, Mozirje, Murska Sobota, Novo mesto, Pesnica pri Mariboru, Radovljica, Ravne na Koroškem, Slovenska Bistrica, Slovenj Gradec, Slovenske Konjice, Šentjur pri Celju and Žalec. The questionnaires were delivered personally and the superiors distributed them among the civil servants. Later, the questionnaires were returned by mail. For some units, the questionnaires were sent by mail and the subsequent procedure was the same as in the other cases.

3 Results

3.1 Personal perception of the seriousness of corruptive behaviour

It was discovered that civil servants are in general quite tolerant of accepting gifts and free snacks, but they estimate that other behaviour were either serious (performing profitable activities, new year gifts) or extremely serious (bribes, theft, wrongdoings on the part of the superior, not taking prompt measures against the offender).

The majority of civil servants (92.4 %) believe that the wrongdoings of the superior belong among the extremely serious corruptive behaviour (case 9 in figure 1). The majority of the respondents take corruption very seriously.

The perception of the seriousness of corruptive behaviour depends on the respondent's age and their experience in the work post. The older the respondent, the more seriously he perceives corruptive behaviour. Even though the years of work experience and the length of work experience in public administration are related, the respondent's perception of the seriousness of corruptive behaviour is not directly linked to the length of his work experience in public administration. A connection among the factors is shown in Table 1.

The respondent's estimation of the seriousness of behaviour is connected to all the special factors included in the questionnaire. The more serious the perception of the behaviour, the more serious is the perception of the behaviour as seen by others (colleagues). If the violation of the rules is considered a serious one, then the penalty should be more severe and, in fact, the penalty really is a more severe one. Then the employees are willing to report an offender. The highest correlation is the one between the respondent's perception of seriousness of behaviour and their opinion on the perception of the seriousness of the behaviour of others (colleagues). Regressive analysis shows that the connection between the respondent's perceptions of the seriousness of behaviour only explains 2% of the variance of their own willingness to report an offender, for all the cases together. The data is shown in table 2.

3.2 Perception of the willingness to report the offender

On average, the willingness to report an offender is placed rather low (3.03). Behaviours that are seen as less serious are less likely to be reported than the behaviours that are meant to be more serious. On average, the least willingness to report an offender is shown for an offender who accepts free snacks and gifts, while a bit more willingness is shown towards offenders who perform some profitable activities and considerably more towards the offender who accepts presents for New Year or Christmas. The majority of respondents would report an offender who stole money and approximately the same amount would report a corrupt superior officer. About a fifth or a third of the respondents would not report an offender.

Older and more experienced respondents are more likely to report an offender. Men are more likely to report an offender than women. Regarding the respondent's function, management is more willing to report an offender in comparison with other employees, regardless of their function. Civil servants are no more willing to report an offender than the technical employees.

Table 1: Pearson's correlation coefficient among respondent's evaluation of the seriousness of behaviour and other factors

VARIABLE	Personal evaluation of seriousness of behaviour	
	r	p
age	0.18	0.0022
length of work experience	0.15	0.0077
opinion of colleague's evaluation of seriousness of behaviour	0.72	< .0001
violating organizational rules	0.51	< .0001
deserved penalty	0.38	< .0001
actual punishment	0.14	0.0260
readiness to report an offender	0.42	< .0001
opinion on a co-worker's readiness to report an offender	0.25	< .0001

The more serious the respondents feel about the behaviour, the more likely it is that the respondents will report the offender if their behaviour shows violating the rules. They feel that an offender deserves a more severe punishment and he would actually get a more severe one. The more the respondents feel their colleagues perceive certain behaviour as a serious one, the more they are likely to report an offender and they also feel that their colleagues would be more willing to report an offender. The respondents' willingness to report an offender is related most to their perception of whether their colleagues are willing to report an offender and it is also significantly connected to their opinion on how seriously their colleagues perceive the behaviour. The respondents' perception of the seriousness of behaviour is placed lower, in the second position, and the opinion that certain behaviour is an offence is much lower.

According to regression analysis, the strongest factor by far is the one that can explain almost half (43 %) of the variance of one's willingness to report an offender looked upon all cases together – the opinion of the respondents on their colleagues' willingness to report an offender. If the respondent believes that the colleagues are ready to report an offender, there is a stronger possibility that they will report an offender themselves. Other factors that also influence the respondent's willingness to report an offender are: the respondent's gender, opinion on the

offender's deserved penalty, respondent's age and education, opinion on breaking organizational rules, the respondent's own perception of the seriousness of the behaviour of colleagues and the membership of the inner organizational unit. Females are less ready to report an offender than males. Using regression analysis we found out, that gender can explain an additional 5% of variance in respondent's willingness.

All these factors can explain 61% of the variance of respondent's willingness to report an offender. The data can be seen in Table 2.

It is important to recognize that changing one factor necessarily means changing the other factors as they are strongly correlated.

The more serious the respondents feel about the seriousness of the behaviour, the more difficult it gets to explain the differences in their willingness to report an offender on the base of their own estimation of the seriousness of the behaviour. Just the opposite would be expected and logical.

4 Discussion

The results show a low level of integrity in civil servants. If integrity was at a higher level, the respondent's personal perception of seriousness of behaviour should be

Table 2: The results of regression analysis for the dependent variable »Respondent's own willingness to report an offender« for all cases together.

No.	VARIABLE	ΔR^2	R^2	F	p
1.	judgement on colleague's willingness to report an offender	0,43	0,43	151,72	< ,0001
2.	gender	0,05	0,48	18,16	< ,0001
3.	judgement on the offender's deserved penalty	0,04	0,52	14,95	0,0001
4.	age	0,02	0,54	8,91	0,0032
5.	education	0,02	0,56	8,00	0,0052
6.	Judgement on breaking organizational rules	0,01	0,57	6,75	0,0101
7.	evaluation of the seriousness of the behaviour	0,02	0,59	9,09	0,0029
8.	judgement on the seriousness of colleagues	0,01	0,60	5,09	0,0251
9.	Inner organizational unit	0,01	0,61	3,64	0,0580

strongly linked both to respondent's opinion whether behaviour represents breaking the rules and to their own willingness to report an offender. In our opinion, working with human resources in public administration lacks directions to help build up an evaluation system and the integrity of each civil servant. In the future, special attention should be paid to the integrity of the employees in public administration units.

We determined there is a low level of willingness to report an offender among civil servants in public administration units. It is most likely that this is due to a code of silence. Further studies should confirm the existence of a code of silence and, if it exists, the reasons for it should be stated.

A higher level of willingness to report an offender among older respondents is connected to a perception of the seriousness of corruptive behaviour. Younger respondents perceive corruptive behaviour in a milder way in comparison with older respondents, so it is understandable that they are less willing to report an offender. Further studies are needed to define the reasons for the differing perception of the seriousness of corruptive behaviours among older and younger respondents.

A higher level of willingness to report an offender within managing personnel arises, in our opinion, from the nature and content of the management work. Leading and controlling functions are more evident in management than in any other function.

In our opinion, the basic reason for the low level of willingness to report an offender among civil servants is the feeling of safety. Employees do not feel safe and protected enough to dare report offenders. There are several possible reasons for that. In our opinion, they fear that the legal system (organizational rules) does not enable efficient protection. Maybe employees do not trust their superiors. They may have had bad experience. Each individual who needs to make their own decision whether to report an offender or not, weighs reasons for and against the reporting. The decision depends on the reasons that prevail. Employees who report an offender should be protected from revenge, which could be done by creating a secure environment. At the same time, measures should be provided that have a positive and stimulative effect so that it would be easier to make the decision to report an offender.

We found out that women are less willing to report an offender than men. If we want to heighten the willingness to report offenders, we need to pay special attention to the female population.

It is extremely difficult to compare these results with the results of the other studies presented in the Introduction because the research is methodologically different and contains a different sample etc. We believe that the perception of corruption among civil servants in public administrative units is similar in Slovenia and the results of this research confirmed the cognition of previous studies and may serve as their supplement. Comparing the standpoints of police officers and civil servants in public administration units would be inappropriate or, at least,

very difficult because the nature of work is completely different.

Appropriate measures can improve the willingness of employees to report offenders. Pagon and Lobnikar (op. cit.) state that within an organization an environment needs to be created that stimulates integrity and professional culture, which is not tolerant towards corruption. Among the measures to achieve this, the authors state:

Appropriate and transparent work with people.

Employees need to have the feeling that they are treated honestly. Honesty can be ensured by fair relations among employees, clear and unbiased standards of work, the same for everybody and by appropriate solutions of conflict situations. The management's and director's decision making should be transparent, clear and unambiguous. That goes for the human resource policy, systematization, transference of civil servants, stimulative bonuses and other human resource measures.

Evaluation and lessening the risk for corruptive behaviour.

We can change specific work procedures in such a way as to estimate a corruption risk and try to lessen it, especially with those civil servants who belong to an at risk group. We discovered that an at risk group in public administration units consists of younger employees, employees with fewer years of work experience, civil servants and technical staff. Further studies are needed to define risk groups in each public administration unit. The basic aim of our studies is to offer help and guidance and should by no means impose penalty measures. Analysis of risk is recommended to evaluate and lessen corruptive risk. The aim of such analysis is to uncover dangerous or »weak« points that could cause and stimulate corruption. It is evident from experience that corruption exists at points where outside contacts are needed (ex. Contact with customers, suppliers, expert opinions, translating services and field inspections) and, in cases of decision making, where third persons could be in a better or worse position (ex. the delivery of public orders). An analysis of risk presents the basis to foresee practical measures and control mechanisms to locate dangerous areas and neutralize »weak« points.

The attitudes of the highest public administration management and setting a positive example on the part of the public administration management.

The head and other leading staff should take clear standpoints concerning occurrences of corruption and they should inform subordinates and citizens about it. But this is still insufficient. Even in specific cases, one should consistently keep one's word. Consistent fight against corruption is the best example for co-workers.

Principles of taking measures in occurrences of corruption.

Public administration units should elaborate the principles of taking measures for the employees in cases of corruption (possibly concrete ones). Principles should be written and easily accessible by any employee in a public administration unit. Grounds have been stated on the state level with new legislation. We believe that public administration units should define in their inner acts, specifi-

cally and concretely, how the employees are expected to act in different cases of corruption. The policy needs to be based on zero tolerance. (Pagon & Lobnikar, op. cit.).

Permanent anticorruption education and training.

It is extremely important to introduce an employee into the work and all other training, where the employees are acquainted with administrative ethics, code of acting for civil servants and other acts that regulate this field. Regulations should be accepted and signed by every employee when they take up work in a public administration unit and the head should make this perfectly clear to them. In so doing, we ensure the awareness and sensibility of the employees. Anticorruption recommendations should be delivered regularly in obligatory seminars and training, at official discussions and meetings, personal discussions etc. Special attention should be paid to learning organizational policy and the procedures referring to deviant behaviour. Pagon stresses (Pagon & Lobnikar, op. cit.; summarized after Pagon, 2000) that ethical doings and personal integrity represent the strongest weapons against all kinds of deviation.

Plan of integrity.

The plan of integrity elaborated by public administration units is defined by the law for the prevention of corruption (2004) and these are »measures of a legal and factual nature that prevent and suppress the possibilities for the formation and development of corruption in an organ«. The plan estimates factual exposure to corruption, describes work procedures and decision making procedures. They try to define the exposed posts where there is a higher possibility for the occurrence of corruption and certain mechanisms are provided to prevent corruption and plan improvements.

To lower the tolerance limits of citizens.

If citizens start to take administrative corruption as a norm, then it is almost impossible to eradicate it. That is why the public must be made sure that cases of corruption in public administrative units are exceptions and that those civil servants in public administration units disapprove and severely penalize them. At the same time, they need to know that bribing or an attempt to bribe a civil servant is a criminal offence. Pagon and Lobnikar (op. cit.) suggest, that these measures should be taken with a great deal of precaution and inner and outer activities in the media should be well executed. Brochures for employees and citizens could be prepared where it would be clearly stated that the civil servant who accepts a bribe is a criminal who deserves severe criminal penalties and disciplinary reprimands.

Inner preventive measures.

Preventive measures are not enough by far to prevent the occurrence of corruption. Inner preventive measures are directed towards detecting, uncovering and punishing employees who violate the regulations. This assignment can be performed by administrative inspectors, the managing staff in public administrative units – administrative managers or other controlling mechanisms.

The results clearly indicate that the problem of corruption in public administrative units should be dealt with most seriously and in a complex way. The measures must be ensured and carried out in all segments of a state and in society in general. This is the only way to fight and prevent corruption.

5 Conclusion

Even though the majority of the employees take administrative corruption very seriously, there is a minority (about a fifth of the respondents) who are more tolerant towards cases of corruption. This group consists of younger employees or employees with fewer years of work experience. Older employees have stricter criteria and take corruptive deeds more seriously. The more seriously it is perceived by co-workers, the more seriously it is perceived by them and vice versa (factors are in the highest possible interdependence). According to regression analysis, the share of variance of one's own evaluation of seriousness, which explains a variability in the willingness to report, is low.

On average, the willingness of employees to report an offender is low. If employees perceive behaviour seriously, it is more likely they will report an offender. There is a strong probability that a code of silence exists and protects offenders. An offender is more likely to be reported by men than women, older employees rather than young ones, employees with more work experience rather than those with less work experience and employees in leading positions more than civil servants or technical posts. A low level of willingness to report an offender stems from the feeling of safety or threatening employees. Employees do not feel safe /protected enough to decide to report an offender in larger numbers. By means of regression analysis, it was found that the highest variance of one's own willingness to report an offender is explained by the employee's opinion on whether their colleagues are willing to report an offender (43%). If employees think their colleagues would report an offender, they are more willing to report an offender themselves and vice versa. All other factors can explicate a considerably lower variance of one's own willingness to report an offender. These are the employee's gender, their opinion on a deserved penalty, their age and education, their opinion on breaking rules, their own perception of the seriousness of behaviour, their opinion on a co-worker's perception of the seriousness of behaviour and the employee's membership in the inter-organizational unit.

The most important finding in this research is that an employee's personal perception of cases of corruption (a personal evaluation of the seriousness of behaviour and a personal willingness to report an offender) is significantly connected to the opinions of employees on how the occurrences of corruption is perceived by others (their co-workers). We believe that the employee's personal perception of cases of corruption should mostly be connected to one's own evaluation of the seriousness of behaviour

and one's own evaluation of whether certain behaviour means breaking the rules and it should not depend on the opinions and perceptions of co-workers and their evaluation of the seriousness of behaviour and their willingness to report an offender.

This research into corruption in public administration units is an interdisciplinary one and the first in Slovenia. It was limited by a relatively small sample and based on the reports of employees. If we had a chance to actually observe how employees act and react, we may reach different conclusions. Nevertheless we believe that the research represents a contribution to understanding the occurrence of corruption in public administrative units and it suggests some organizational measures to improve the situation. It also represents a suitable starting point and basis for further studies in this field.

6 Literature

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Korupcija v upravnih enotah in organizacijski ukrepi za njeno preprečevanje

V prispevku so predstavljeni rezultati raziskave, v kateri sta avtorja ugotavljala stališča javnih uslužbencev, zaposlenih v upravnih enotah v Sloveniji, o pojavih korupcije na delovnem mestu. Uslužbenci v upravnih enotah v povprečju jemljejo pojave korupcije resno. Uslužbenčevo lastno doživljanje pojavov korupcije in pripravljenost prijaviti kršitelja je v najtesnejši medsebojni povezanosti z njegovim mnenjem o tem, kako pojave korupcije doživljajo drugi - njegovi sodelavci (kako resno jemljejo pojave korupcije sodelavci, ali so sodelavci pripravljeni prijaviti kršitelja itd.). Med uslužbenci obstajajo pomembne razlike v doživljanju pojavov korupcije glede na spol, glede na funkcijo, ki jo uslužbenec opravlja, in glede na njegovo pripadnost notranji organizacijski enoti.

Ključne besede: upravna korupcija, korupcijsko vedenje, pravilo molčečnosti, protikorupcijski ukrepi, kršitelj, javni uslužbenec, upravna enota.

Fuzzy SERVQUAL Analysis in Airline Services

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This study is aimed at measuring and summarizing the perceived and expected service quality of passengers of an international airline and to provide the passengers' opinions to the decision makers employing fuzzy logic. The appropriate fuzzification procedure was determined to be the trapezoidal membership function. Using SERVQUAL methodology, the optimal fuzzy interval of the gap scores was determined for each item. The interpretations of these fuzzy intervals were categorized into three areas - optimistic, neutral and pessimistic passenger views - to assist the decision makers in identifying which items of services are satisfactory and which are in need of improvement.

Key words: Airline service quality, fuzzy numbers, fuzzy SERVQUAL scores.

1 Introduction

Today, most airline firms have recognized the importance of service quality. As Ostrowski (1993) said, the delivery of a high quality service become a marketing requirement among air carriers and continuing to provide perceived high quality services would help airlines acquire and retain customer loyalty (Chang and Yeh, 2002). In evaluating quality, understanding the passengers' expectations and measuring the service quality they desire plays a major role. Parasuraman et al. (1985, 1988) developed SERVQUAL for measuring service quality in organizations (Cavana et al., 2007) and since then, SERVQUAL has been used as an acceptable instrument in service quality studies. However, SERVQUAL-based studies of airline service quality are limited. With this as a starting point, this study focuses on measuring airline service quality from the point of view of international passengers using the SERVQUAL model with fuzzy logic. It also demonstrates how an airline firm can utilize a diagnostic tool when managing its service quality based on passenger opinions.

SERVQUAL studies of airline service quality are commonly performed by calculating the mean averages of the passengers' gap scores. As a SERVQUAL questionnaire is built using Likert scaling, the categories are ranked in ordinal scales, which indicates that the calculation of mean scores is not an efficient method of evaluation (Pakdil and Aydin, 2007). For a ranking scale, frequencies or percentages are offered to obtain reliable conclusions.

Nevertheless, if the evaluation is performed by mean averages or standard deviations, the passengers' raw scores should be transformed into quantitative interval scores. For this reason, this study offers fuzzy numbers in the measurement of service quality. Fuzzy quality is an overall comprehensive reflection of clear quality (Yongting, 1996). Yongting (1996) points out that, although fuzzy quality and clear quality are completely different, they can be transformed into each other and are also consistent with each other.

Additionally, fuzzy logic enables analysis using ill-defined sampling or where there is missing data. In survey analysis, including SERVQUAL, it is hard to achieve an optimal sample that includes equally distributed gender, nationality, marital status, educational level and so forth. Therefore, generalizing the findings of a survey is quite risky, as the applicants in the sample cannot sufficiently reflect the quality evaluations of all passengers. Furthermore, a questionnaire itself is a subjective tool and daily variables can affect the results. The passengers' perceptions can change depending on their mood during the response time - or the purpose of the flight can also affect responses while filling in the questionnaire form. Passengers leaving for a holiday would be more optimistic than those ones flying for business purposes (Pakdil and Aydin, 2007). For this reason, we propose to analyze the responses using imprecision methods. Fuzzy logic is a way to analyze when some defects exist in the data or in the sample. It allows one to obtain results for different types of customers or managers. Fuzzy logic keeps in mind that a

perception of an item would be different for optimistic and pessimistic passengers. This may also be true for the quality manager of the firm. An optimistic manager would be more easily satisfied with the service quality analyses results than a pessimistic manager. Hence, while a pessimistic (risk averse) manager would improve an item, the other may not perceive a need for any improvement on the same item. For this reason, this study utilizes fuzzy logic to offer different solutions for differently characterized passengers and managers. Although there are some fuzzy related quality studies for airlines (Tsaur et al, 2002; Chang and Yeh, 2002; Wang, 2008), this study is focused on the fuzzy SERVQUAL scores of airline services. This study is an evaluation of just one specific airline firm, whereas former studies depended on ranking alternatives by analyzing three or more different firms.

2 Fuzzy Logic and Fuzzy Numbers

Fuzzy sets were introduced in 1965 by Lotfi Asker Zadeh in order to define human knowledge using mathematical expressions. When the main concern is with the meaning of information-rather than with its measurement, the proper framework for information analysis is possibilistic. Thus implying that what is needed for this analysis is not called the theory of possibility (Zadeh, 1999). Since then, fuzzy sets and fuzzy logic have been widely used in cases of ill-defined or incomplete data and for expressing the satisfaction preferences of personal evaluations. Uncertainty in the model, without the importance of the reason, can be eliminated using fuzzy numbers and crisp intervals can then be provided for decision makers. Crisp intervals are called α -cut sets in fuzzy theory and they reflect the optimal decisions, depending on the risk attitude of the decision maker. Fuzzy numbers are presented with their membership functions.

DEFINITION 1. A fuzzy set $\tilde{A}$ in a universe of discourse X is characterized by a membership function $\mu_{\tilde{A}}(x)$ which associates each element x in X , with a real number within the interval of $[0,1]$. The definition of $\mu_{\tilde{A}}(x)$ implies that the degree of possibility may be any number in the interval of $[0,1]$, rather than just a 0 or a 1. The function value $\mu_{\tilde{A}}(x)$ terms the grade of membership of x in $\tilde{A}$ (Zadeh, 1999; Chen, 2000).

DEFINITION 2. Let $\tilde{A}$ be a fuzzy set and $\mu_{\tilde{A}}(x)$ be the membership function for $x \in \tilde{A}$, if $\mu_{\tilde{A}}(x)$ is defined as below;

$$\mu_{\tilde{A}}(x) = \begin{cases} \frac{(x-a)}{(b-a)}, & a \leq x < b \\ 1, & b \leq x \leq c \\ \frac{(d-x)}{(d-c)}, & c < x \leq d \end{cases}$$

then x is a trapezoidal fuzzy number (Klir and Yuan, 1995). In Figure 1, the trapezoidal number $x; x=(a;b;c;d)$ is presented. For $b=c$, it is a triangular fuzzy number, where the shape turns into a triangle.

DEFINITION 3. Let $\tilde{A}$ be a set of fuzzy numbers. $\tilde{A}_{\alpha} = \{x \mid \mu_{\tilde{A}}(x) \geq \alpha \text{ and } x \in X\}$ is called an α -cut set for $\tilde{A}$. In Figure 1, $[x_{\alpha 1}, x_{\alpha 2}]$ presents an α -cut set for $\tilde{A}$.

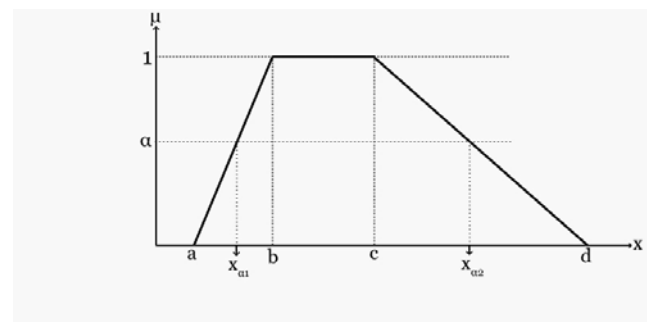


Figure 1: Trapezoidal fuzzy number.

Figure 1 can be read as; when x is in the $[b,c]$ interval, it belongs to $\tilde{A}$ with a possibility of 1. When x decreases from "b", the degree of belonging is calculated by the $\mu_{\tilde{A}}(x)$ function. Obviously, for $x \leq a$, the belonging is zero. Note that a is the lower limit of set $\tilde{A}$. Similarly, when x increases towards d , the membership function approaches zero. As shown in Figure 1, $\tilde{A}_{\alpha}$ (an α -cut interval) is a crisp set.

DEFINITION 4. Assume that T and Y are fuzzy numbers and their α -cuts are $[t_{\alpha 1}, t_{\alpha 2}]$ and $[y_{\alpha 1}, y_{\alpha 2}]$. Subtraction of the fuzzy numbers T and Y , denoted as Z , is also a fuzzy number and it is calculated using the α -cuts. The subtraction is defined as;

$$Z_{\alpha} = [\min(t_{\alpha 1} - y_{\alpha 1}, t_{\alpha 2} - y_{\alpha 2}), \max(t_{\alpha 1} - y_{\alpha 2}, t_{\alpha 2} - y_{\alpha 1})]$$

for every α -cut (Lai and Hwanh, 1992).

3 Fuzzy Quality and Measuring Airline Services with Fuzzy SERVQUAL

Fuzzy logic was first used in quality evaluation by Yongting (1996), in analyzing the process capability index. He studied the basic structure of quality in production processes and focused on a "suitable quality" concept rather than deterministic, crisp (non-fuzzy) quality. The study was a pioneer for later fuzzy quality research in production and services. Chien and Tsai (2000) studied fuzzy service quality and proposed a new methodology for evaluating perceptions in the retail industry. They used triangular fuzzy numbers and Hamming distance to overcome the subjective responses to SERVQUAL questions.

In airline services, quality evaluations differ from other sectors. In the airline industry, only the passengers can truly define the service quality (Chang and Yeh, 2002). However, while the service quality is measured via survey,

the responses depend on the customers' own observations and thus the responses change depending on personal opinions. In airline services especially, passengers evaluate the perceived services in a limited time frame - before leaving the plane. Additionally, in some surveys, frequency of flying, nationality, educational level or the gender of the respondents may not be uniform. Moreover, some of these respondents may be first-time fliers, who may not be sure of their expectations or their satisfaction with their first flight. From these starting points, Chang and Yeh (2002) first performed the most significant application of fuzzy survey analysis on airline services. They used triangular fuzzy numbers in defining the evaluations and proposed ranking of airline alternatives among four firms, depending on their performance index. In this study, the nationalities, gender and educational levels of the respondents are distributed unequally, which is the main reason for analyzing the responses using fuzzy logic.

Table 1: Service quality dimensions of the SERVQUAL items

# of Item	Service Quality Dimensions
1	On-time departure and arrival
2	Consistent ground/in-flight services
3	Performing the services right the first time
4	Quality of the food and beverage
5	The behaviour of employees inspires confidence
6	Safety
7	Employees have the knowledge to answer my questions
8	Clean and comfortable interior/seat
9	In-flight entertainment facilities and programs
10	In-flight newspaper, book, etc. facilities
11	The availability of waiting lounges
12	In-flight internet/email/fax/phone facilities
13	Courteous employees
14	Neat and tidy employees
15	Non-stop flights to various destinations
16	Convenient flight schedules and enough frequencies
17	Flight problems (cancellations, delays, deviations from schedules)
18	The availability of global alliance partners' network
19	Understanding passengers' specific needs
20	Individual attention to passengers
21	The availability of a frequent flyer program
22	The availability of air/accommodation packages
23	The availability of travel related partners (e.g. hotels, car, rentals)
24	Efficient check-in/baggage handling services
25	Employees are always willing to help
26	Employees handle requests/complaints promptly
27	Handling of delayed/lost/damaged/overweight baggage
28	Employees' foreign language level
29	Employees' approach to unexpected situations
30	The quality of the reservation services
31	Handling fare problems
32	The advertising of the airline company
33	Employees' behaviour to delayed passengers
34	The external appearance of the airplane
	The image of the airline company

Hence, fuzzy logic allows the removal of subjective judgments.

Tsaur et al (2002) worked on ranking three different airline firms and used triangular fuzzy numbers in multi-criteria analyses. The study used an Analytical Hierarchical Process (AHP) to determine the criteria weights, then measured the overall performances of the airlines in terms of fuzzy numbers. Finally, it ranked the firms according to their similarities to ideal solutions.

A few of the previous airline service quality studies analyzed performance with fuzzy logic. They all utilized triangular fuzzy numbers. Triangular fuzzy numbers are more definite than trapezoidal fuzzy numbers for deter-

mining the optimal decision. Triangular numbers give the optimal membership (belonging) degree with a single value, where trapezoidal structures extend this single number to an interval. In this study, we examined trapezoidal fuzzy numbers in order to offer different optimal solution intervals depending on the risk taking attitude of the decision maker. This facilitates the decision processes and leads to more realistic solutions.

3.1 Application

In order to measure the service quality of the airline, a questionnaire was designed based on a 5-point Likert sca-

Table 2: Demographic statistics.

Variable		%
Gender	Male	69.1
	Female	30.9
Age	Less than 21	3.0
	21-30	24.8
	31-40	28.2
	41-50	23.8
	51-60	13.8
	61 or older	6.4
Nationality	Western European	5.0
	Eastern European	1.3
	Japanese	1.7
	Indian	0.9
	Turkish	84.6
	United States	6.5
Education	Elementary school	10.4
	High school	21.1
	University	68.5
Marital status	Married	71.8
	Single	28.2
Average use of airline	More than once a week	3.4
	Once a week	6.4
	Once a month	39.6
	Once a year	17.8
	Less than once a year	31.5
Purpose of last trip	Business	27.6
	Holiday	18.1
	Business and holiday	39.9
	Other	14.4
Frequently used airlines	United States-based	5.4
	European-based	73.2
	Asian-based	2.4
Who helps selecting airline	Family	10.4
	Friends	2.7
	Myself	59.4
	Travel agency	21.1
	Other	6.4
The most important reason for choosing the airline	Price	25.2
	Past experience	56.0
	Advertisements	4.0
	Recommendation	6.7
	Other	8.1

le. The first part of the questionnaire contained control variables such as gender, age, nationality, education level, job position and so forth. The second and the third parts included 35 service quality items (Table 1), measuring the passengers' expectations and perceptions. Then, the questionnaire was examined by airline firm experts and their contributions were incorporated into the questionnaire. Next, the questionnaire was pre-tested by 18 academic staff from XXX University, who had flown at least once, to test how comprehensible the questionnaire was and how easy it was to respond to. Finally, some minor changes were made to the questionnaire form and the content validity of the questionnaire was deemed adequate. Cronbach's alphas were calculated to test reliability and were found to be .89 for both parts.

In applying the questionnaire, firstly a sample size was determined. Based on DeVaus (2000), with a 95% confidence level and a 5% error margin, the sample size was calculated as 385. The sample consisted of passengers on an international airline firm that flies from Ataturk International Airport, Istanbul, to various destinations. The questionnaires were distributed accompanied by a covering letter explaining the objective of the survey and assuring the confidentiality of all respondents. A total of 1000 questionnaires were distributed to the sample and the response rate was 32%. However, a small amount of filled questionnaires were not sufficient to be analyzed. Therefore the actual response rate turned out to be 29.8%. The survey was applied for over two weeks and was performed on three different routes based on cluster sampling. The airline firm preferred to conduct the survey on board, in the last hour of the flight. Participation was voluntary.

In this study, the survey was conducted on 298 passengers. The passengers were categorized as follows; male (69.1%), Turkish (84.6%), married (71.8%) and has at least a graduate degree (68.5%). The other demographic statistics are presented in Table 2.

Firstly, both the perceptions and the expectations of 298 respondents are converted to fuzzy numbers. Evaluations defined using a 5-point Likert type scale of linguistic expressions, are converted to trapezoidal fuzzy numbers. In the expectation section, the scale is presented as {Unimportant, of Little Importance, Moderately Important, Important and Very Important}, while it is {Strongly Disagree, Disagree, Undecided, Agree and Strongly Agree} in the perception part. The scale defined the fuzzy numbers as; Unimportant/ Strongly Disagree = (0, 0, 0, 0); of Little Importance/ Disagree = (0, 0.11, 0.19, 0.42); Moderately Important/ Undecided = (0.32, 0.41, 0.58, 0.65); Important/ Agree = (0.58, 0.80, 0.90, 1) and Very Important/ Strongly Agree = (1, 1, 1, 1). These transformations are based on Tsai and Lu's (2006) study, where a 9-point Likert scale was used. As a 5-point Likert scale was used in this study, Tsai and Lu (2006)'s relations between fuzzy numbers and evaluations were adapted using fuzzy arithmetic. Leaving the first, last and medium linguistic terms as the same, the ones between them are redefined using the fuzzy arithmetical means. In Figure 2, graphical representations of the fuzzy evaluations are given.

In Figure 2, an "Unimportant" evaluation implies that the expectation of the item is marked as 1 in the original questionnaire and presented as (0, 0, 0, 0), in terms of a fuzzy number. Similarly, the presentation is same if the perceived item is "Strongly Disagree", where it is also defined as (0, 0, 0, 0) as a fuzzy number. When the expectation is "of Little Importance" or the perception is "Disagree", the figure marks the evaluations as (0, 0.11, 0.19, 0.42). The rest of the evaluations for both expectations and perceptions are drawn in a similar way. Additionally, note that "Disagree" is a better evaluation than "Strongly Disagree". Considering these two evaluations, "Strongly Disagree" is indicated with a higher fuzzy number than "Disagree". Although the first components of these num-

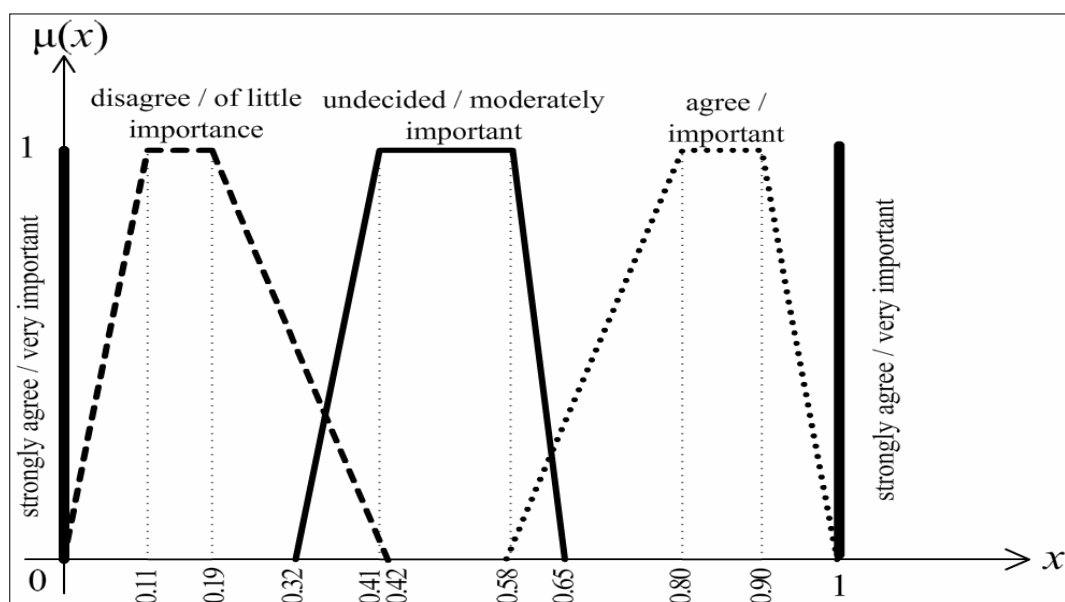


Figure 2: Evaluations of the items, in terms of fuzzy numbers.

bers are “0”, the next ones show the superiority of “Disagree” against “Strongly Disagree”.

After determining the fuzzy expressions, the SERVQUAL scores of every passenger for 35 items are defined using fuzzy numbers. The mean values of the fuzzy numbers are advisable expressions in personal evaluations while studying with fuzzy numbers (Tsai and Lu, 2006). For this reason, the mean values of each item are calculated based on 298 respondent evaluations as provided in Definition 4. It is obvious that the means are also fuzzy numbers. As the evaluations are defined using trapezoidal fuzzy numbers, the means are also calculated as trapezoidal fuzzy numbers. Next, because the manager addresses customer satisfaction; the limits are calculated for various α -cuts, which imply the risk attitudes, and the results are presented in Table 3.

In Table 3, most of the gaps are negative values, which show that the passengers are generally unsatisfied with their services. In this case, the manager received unsatisfactory results on most of the items.

The table should be read according to the risk attitude of the decision makers (passengers or managers). For a risk averse, pessimistic decision maker, the α -cut is 1 and for the first item, the result indicates that the gap score should be kept in the interval of $[-0.321, -0.239]$ in order to satisfy the pessimistic decision maker. However, because the interval is negative, the manager perceives an unsatisfied result for the first item. If the decision maker is a little bit risk taking, s/he should look at the 0.75 valued α -cut. The rest of the table can be interpreted similarly. For a risk taking, optimistic decision maker, the α -cut is 0, and the optimal gap score interval is calculated as $[-0.425, -0.135]$ for the first item. Conversely, looking at the last

Table 3: Lower and upper gap limits for some α -cuts.

item	α -cuts									
	$\alpha = 0.00$		$\alpha = 0.25$		$\alpha = 0.50$		$\alpha = 0.75$		$\alpha = 1.00$	
	lower	upper	lower	upper	lower	upper	lower	upper	lower	upper
1	-0.425	-0.135	-0.399	-0.161	-0.373	-0.187	-0.347	-0.213	-0.321	-0.239
2	-0.271	0.079	-0.238	0.049	-0.205	0.018	-0.171	-0.013	-0.138	-0.043
3	-0.215	0.102	-0.182	0.071	-0.150	0.040	-0.118	0.009	-0.085	-0.022
4	-0.317	0.127	-0.281	0.090	-0.245	0.054	-0.208	0.017	-0.172	-0.019
5	-0.229	0.104	-0.198	0.078	-0.167	0.053	-0.136	0.027	-0.106	0.001
6	-0.171	0.015	-0.147	0.000	-0.123	-0.016	-0.098	-0.031	-0.074	-0.046
7	-0.190	0.149	-0.160	0.120	-0.129	0.092	-0.099	0.063	-0.069	0.034
8	-0.023	0.081	0.009	0.052	0.042	0.023	0.074	-0.006	0.106	-0.035
9	-0.309	0.224	-0.267	0.185	-0.224	0.145	-0.182	0.106	-0.140	0.067
10	-0.388	0.163	-0.350	0.124	-0.312	0.085	-0.274	0.046	-0.236	0.007
11	-0.194	0.098	-0.156	0.058	-0.117	0.018	-0.078	-0.022	-0.040	-0.062
12	-0.550	0.016	-0.518	-0.016	-0.487	-0.049	-0.456	-0.081	-0.424	-0.114
13	-0.213	0.098	-0.182	0.071	-0.151	0.045	-0.121	0.018	-0.090	-0.008
14	-0.126	0.130	-0.100	0.107	-0.074	0.085	-0.048	0.062	-0.022	0.040
15	-0.243	0.101	-0.214	0.071	-0.184	0.041	-0.155	0.011	-0.125	-0.020
16	-0.320	0.080	-0.284	0.043	-0.248	0.007	-0.213	-0.029	-0.177	-0.066
17	-0.309	-0.094	-0.283	-0.122	-0.257	-0.149	-0.231	-0.176	-0.205	-0.203
18	-0.227	0.211	-0.194	0.178	-0.161	0.144	-0.128	0.111	-0.095	0.078
19	-0.123	0.163	-0.087	0.128	-0.052	0.094	-0.016	0.059	0.019	0.024
20	-0.183	0.272	-0.143	0.234	-0.104	0.195	-0.065	0.156	-0.025	0.117
21	-0.286	0.188	-0.247	0.151	-0.208	0.114	-0.169	0.076	-0.130	0.039
22	-0.150	0.164	-0.112	0.127	-0.074	0.090	-0.037	0.052	0.001	0.015
23	-0.291	0.303	-0.252	0.268	-0.213	0.232	-0.174	0.196	-0.135	0.161
24	-0.291	0.006	-0.260	-0.024	-0.228	-0.054	-0.196	-0.084	-0.165	-0.115
25	-0.264	0.176	-0.228	0.140	-0.191	0.104	-0.154	0.068	-0.117	0.032
26	-0.264	0.122	-0.230	0.090	-0.197	0.057	-0.163	0.025	-0.130	-0.007
27	-0.214	0.045	-0.182	0.019	-0.149	-0.006	-0.117	-0.032	-0.084	-0.058
28	-0.229	0.205	-0.194	0.174	-0.158	0.144	-0.123	0.113	-0.087	0.082
29	-0.258	0.105	-0.222	0.073	-0.186	0.041	-0.150	0.009	-0.114	-0.023
30	-0.245	0.102	-0.211	0.070	-0.177	0.038	-0.143	0.006	-0.108	-0.026
31	-0.169	0.114	-0.133	0.079	-0.097	0.044	-0.062	0.008	-0.026	-0.027
32	-0.305	0.250	-0.262	0.209	-0.219	0.169	-0.176	0.129	-0.133	0.088
33	-0.139	0.186	-0.102	0.152	-0.064	0.118	-0.027	0.085	0.011	0.051
34	-0.239	0.283	-0.199	0.247	-0.159	0.211	-0.119	0.175	-0.079	0.139
35	0.757	0.114	0.786	0.089	0.816	0.063	0.845	0.037	0.874	0.012

item, the positive intervals show that, independent of the risk attitude of the decision maker, the passengers are satisfied with the services of the airline. Although s/he is optimistic, the gap should be kept within the [0.757, 0.114] interval. If s/he is pessimistic, the difference between perception and expectation should be within [0.874, 0.012].

If the calculated gap score for an item is outside these intervals, two different interpretations can be made depending on the sign of the interval. Assume that the limits are negative, which then means that the manager does not expect to satisfy the passenger on that item. However, if a passenger's gap is below the lower limit of the interval, the passenger perceives the service quality as worse than the manager's expectations. Conversely, if the gap is higher than the upper limit of the interval, the passenger is still unsatisfied with the service, but the result is better than the manager's venture. Note that the manager had already ventured this satisfaction in all levels. Then the result suggests an improvement on that item.

If the interval is positive, it shows that the related item is expected to satisfy the decision maker. Although the decision makers' goal is to preserve the gaps within the given intervals, for positive gaps, passenger satisfaction is lower than desired level if the achieved gap is less than the lower limit. This also calls for an improvement in that item. Conversely, if a gap passes over the positive upper limit, it shows that the satisfaction is higher than the aimed satisfaction level. A high positive gap score implies that the perceived service is higher than the manager's estimates/ hopes/ expectations. In this study, the results show that the passengers are unsatisfied with the airline in most of the items, but are satisfied with the image of the airline which is the last item.

4 Conclusion

In the competitive airline industry, as in all service-providing institutions, the service quality must be measured using all the aspects of the service provided. In airlines, it is obvious that the most acceptable evaluations can only be done by passengers who have flown the airline at least once.

Questionnaires are the most applicable tools for investigating the passengers' views. SERVQUAL is widely used both for collecting data and understanding the passengers' thoughts. SERVQUAL is a Likert scale based linguistic questionnaire, where calculating the arithmetic means of responses is not meaningful. By using the fuzzy approach, more expressive results can be achieved not just in case of linguistic data, but to cover loss of data. In order to avoid misleading results and their interpretations, fuzzy logic is used in this study.

Although the optimal sample size was determined at the beginning of this research, it turned out to be an inconvenient sampling procedure in the data collection stage. The demographics showed that there were inequalities in some of the basic features of the respondents, such as nationality, gender, marital status and educational level.

For this reason, the results of the evaluations of passengers cannot be generalized. This led us to analyze the SERVQUAL scores using fuzzy numbers. After transforming the raw scores into trapezoidal fuzzy numbers, gap scores are calculated using fuzzy arithmetic and α -cuts are used to calculate the optimal decision intervals for the different types of decision makers. This would allow quality managers to evaluate their services from the viewpoints of the optimistic, pessimistic or regular passenger.

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Mehka SERVQUAL analiza letalskih storitev

Cilj te študije je merjenje in analiziranje dosežene in pričakovane kakovosti potniških storitev mednarodne letalske družbe in posredovanje mnenj potnikov s pomočjo mehke logike tistim, ki sprejemajo odločitve. Za mehko proceduro je bila kot primerena sprejeta trapezoidna članska funkcija. Z uporabo servqual metodologije je bil za vsako postavko določen optimalen mehki interval razpona zadetkov. Interpretacije teh mehkih intervalov so bile razporejene v tri področja – optimistična, nevtralna in pesimistična mnenja potnikov – s čimer naj bi pomagali tistim, ki sprejemajo odločitve, pri določanju tega, katere storitve so zadovoljlive in katere potrebujejo izboljšave.

Ključne besede: kakovost letalskih storitev, mehke vrednosti, mehki SERVQUAL zadetki

Forecasting the Primary Demand for a Beer Brand Using Time Series Analysis

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Market research often uses data (i.e. marketing mix variables) that is equally spaced over time. Time series theory is perfectly suited to study this phenomena's dependency on time. It is used for forecasting and causality analysis, but their greatest strength is in studying the impact of a discrete event in time, which makes it a powerful tool for marketers. This article introduces the basic concepts behind time series theory and illustrates its current application in marketing research. We use time series analysis to forecast the demand for beer on the Slovenian market using scanner data from two major retail stores. Before our analysis, only broader time spans have been used to perform time series analysis (weekly, monthly, quarterly or yearly data). In our study we analyse daily data, which is supposed to carry a lot of 'noise'. We show that - even with noise carrying data - a better model can be computed using time series forecasting, explaining much more variance compared to regular regression. Our analysis also confirms the effect of short term sales promotions on beer demand, which is in conformity with other studies in this field.

Key words: market research, time series forecasting, beer demand
JEL classification: C22, M31

1 Introduction

Despite being a powerful tool, Time series analysis (De-kimpe and Hannsens 1995) is rarely used in research by marketers. As the main reasons for this reluctance, they mention the availability of quality time series, the unavailability of time series analysis software, a lack of knowledge and a reluctance to use secondary data for modeling customers' behaviour. At the same time, they announce that wide use of time series is still to come with advances in information technology, software development and an increasing number of academic studies devoted to the subject.

This article presents uni- and multi-variate time series analysis applied to market research forecasting. We demonstrate how the primary demand for beer can be forecast better when using time series than with regular regression analysis. The rest of the article is organised as follows: first we present the basic time series analysis, starting with univariate ARMA models. Next, we provide some theory on multivariate analysis with special emphasis on the ARMAX models, which are considered as hybrid univariate models. We then analyse demand factors for a well established beer brand in Slovenia, illustrating the power of time series analysis in comparison with regression analysis. The conclusion summarises our findings.

2 Univariate time series analysis

It is assumed that the reader is familiar with basic time series analysis modeling (autoregressions and moving averages), this topic is thus discussed only briefly. Our analysis begins with univariate shock analysis theory and evolves into ARMAX (autoregression, moving average regression with exogenous variables), which is becoming popular among market researchers.

2.1 The Autoregression process

Let y_t be the sales value at a given time t . A simple method for analyzing the fluctuation in sales is by using the past levels of sales to determine future:

$$y_t = \mu + \phi y_{t-1} + \varepsilon_t, \quad t = 1, \dots, T, \quad (1)$$

where μ represents a constant, the regression parameter and ε_t noise, which it is often assumed to be white noise (where the mean value is 0, the variance is constant over time and has no serial correlation). The model shown in equation (1) is called the AR(1) process – autoregression process of the first order. It can be generalized into AR(n) by:

$$y_t = \mu + \phi_1 y_{t-1} + \dots + \phi_n y_{t-n} + \varepsilon_t, \quad t = 1, \dots, T \quad (1a)$$

In time series analysis, we often write equations with operator notation. Thus the equation (2a) can be written as:

$$\begin{aligned} \varphi_p(B)y_t &= \mu + \varepsilon_t, \quad t = 1, \dots, T, \text{ where} \\ \varphi_p(B) &= (1 - \varphi_1 B - \varphi_2 B^2 - \dots - \varphi_p B^p) \text{ and } B \text{ is the} \\ \text{lag operator: } B^k y_t &= y_{t-k}. \end{aligned} \quad (2)$$

The order (n) of an AR process is determined by two functions: the autocorrelation function (ACF) and the partial autocorrelation function (PACF), defined as:

$$\text{ACF: } \rho_k = \frac{\gamma_k}{\gamma_0}, \text{ where } \gamma_k = E[(y_t - m)(y_{t-k} - m)] \text{ is}$$

called the autocovariance y_t of the order k.

PACF: as the value of the regression coefficient of y_{t-i} , when is regressed on $y_1, \dots, y_{t-i}$ and a constant. The order n of the AR process can also be determined graphically, as by Box and Jenkins, or by using Akaike's criterion, Schwarz-Bayes' criterion or the maximum-likelihood ratio test (Box and Jenkins, 1979).

2.2 Moving average processes

A moving average process can represent the functional dependency of the endogenous variable on past random shocks, which is formulated as:

$$y_t = \mu + \varepsilon_t - \theta \varepsilon_{t-1}, \quad t = 1, \dots, T. \quad (3)$$

Equation (4) is a moving average model of the first order – MA(1). The estimated value of the endogenous variable in time is dependent on random shocks that occurred in the past. We can draw several examples from marketing: a promotional budget is often set as a past period budget + additional non-planned expenses occurred in the past period, a sales forecast can be a function of the past forecasts adjusted with the unplanned shocks that occurred in the past, such as a new buyer (additional sales) or new competitor (lost sales) ...

Like the AR processes, the MA processes can also be generalized to n-th order:

$$y_t = \mu + \theta_q(B)\varepsilon_t, \quad t = 1, \dots, T, \quad (3a)$$

where $\theta_q(B)$ means $1 - \theta_1 B - \theta_2 B^2 - \dots - \theta_q B^q$ and B is the lag operator.

2.3 ARMA model

An ARMA process is the natural combination of autocorrelation and the moving average processes. It can be written as ARMA(p,q):

$$\varphi_p(B)y_t = \mu + \theta_q(B)\varepsilon_t, \quad t = 1, \dots, T \quad (4)$$

The orders (p and q) can theoretically be determined using PACF and ACF. When using ARMA models to forecast a series, p and q must have a meaning in the re-

search field (i.e. a functional dependency of sales upon past advertising expenditures makes sense, the opposite less so).

2.3.1 Univariate shock analysis

Dekimpe et al. (2005) introduced a model of the time persistency of shocks studying univariate time series (a shock occurs in the endogenous variable). The measure that assesses the impact of a shock in an ARMA(p,q) series over time is defined as the ratio of the AR and MA coefficients of its first difference:

$$A(1) = \theta_q(1) / \varphi_p(1) = \frac{1 - \theta_1 - \theta_2 - \dots - \theta_q}{1 - \varphi_1 - \varphi_2 - \dots - \varphi_p}, \quad (5)$$

Equation (5) determines whether a time series is stationary or a trend following a shock. For a marketer, the difference means long term or short term effects.

2.4 ARMAX models

To avoid the complex multivariate time series analysis that comes with techniques like VARMA (Vector autoregressive moving average regressions), a hybrid model of univariate analysis has been introduced by some authors (Wichern 1977, Dekimpe and Hannsens 1995, Bronnenberg et. al 2001), namely the ARMAX (AutoRegressive Moving Average with eXogenous variable) Model. This model includes exogenous variables into the ARMA model, assuming that these variables cannot be dependent on endogenous variables (such as in the VAR models). For marketers these models open a variety of research possibilities (i.e. assessing the impact of any marketing activity on the marketing mix) (Franses 1991). Most marketing activities do not occur at the time of the activity but later. In comparison to multivariate models (VAR, VARX, VARMA) the ARMAX model remains a single equation model, which makes it easier to analyse but loses the generality of the VAR models. This is why Hanssens et al. (2001) call such model the dynamic univariate time series analysis. The model, also called the transfer function, can be written as:

$$\begin{aligned} y_t &= \mu + \gamma_1 y_{t-1} + \gamma_2 y_{t-2} + \dots + \gamma_p y_{t-p} + \beta_0 x_t + \\ &+ \beta_1 x_{t-1} + \dots + \beta_s x_{t-s} + \varepsilon_t - \theta \varepsilon_{t-1} - \dots - \theta_q \varepsilon_{t-q} \end{aligned} \quad (6)$$

In equation (3), the variable x represents an exogenous variable while all other elements are ARMA elements. For more than one exogenous variable, the model can be written as:

$$\begin{aligned} y_t &= \mu + \gamma_1 y_{t-1} + \gamma_2 y_{t-2} + \dots + \gamma_p y_{t-p} + \\ &+ \sum_{i=1}^r \bar{\beta}_i B^i x_{t-i} + \varepsilon_t - \theta \varepsilon_{t-1} - \dots - \theta_q \varepsilon_{t-q}, \end{aligned} \quad (6a)$$

where the part under the sum is a scalar product of the coefficient vector and the vector β of the exogenous variables (x).

The steps of the time series analysis with the transfer functions are the same as for the Box-Jenkins ARMA processes: identification, trial model, parameter identification, diagnosis of the regression model and its residuals through a function called CCF (cross correlation function), which is the equivalent of ACF and PACF in the ARMAX models.

The steps are as follows:

1. Define the ARMA model for the exogenous variable 1st and store its residuals.
2. Use the same ARMA model for the endogenous variables and store the residuals.
3. Compute the CCF between the residuals from points 1. and 2.

Marketers can use the ARMAX model to test how a change in an exogenous variable influence a time series over time. Special cases of such change are discrete events (i.e. regulation changes, competition entry, changes in prices ...). Franses (1991) used this sort of study to assess changes in the demand for beer in The Netherlands due to a change in taxation that occurred in 1984. The method of using discrete events in ARMAX models is called Intervention analysis (Box and Tiao 1976).

3 Estimating the primary demand for beer using time series analysis

The demand for beer has been extensively researched in the past (Bourgeois and Barnes 1979, Franke and Wilcox 1987, Leeflang and Van Duijn 1982). All of up to date research use weekly, monthly or even yearly aggregated data from around 50-100 observations to assess the determinants of beer demand. Our study deals with the daily sales of a leading Slovenian beer brand in a major retail store. We assume that a typical sales promotion of 2-3

weeks can only be dynamically observed using daily sales as a 14-21 day period generates enough data for statistical significance. A weekly sales series would only include few data points for analysis, which is not enough. Monthly data and larger time spans is not appropriate for dynamically studying sales periods. Our data, shown in Picture 1, represents the daily sales of a beer brand dating from 1.1.2005 till 31.12.2006.

Slovenian retail stores are usually open 7 days a week. law enforcement only forbade shops from openings on Sundays between 1.1.2006 and 19.2.2006. Shops also remain closed during national holidays. The time series is broken on these days. To prevent losing the seasonality of the series, we filled in the closed dates with exponentially smoothed average sales of 5 days before the closing date. To avoid increasing the total sales, we decreased the sales prior to the closing day and added the sum of lowered sales to the closing date. Our rationale behind this procedure is that customers would know that a day is approaching with no possibility for purchasing and would stockpile the product. By leaving the series without these changes, the ACF and PACF functions would produce faulty autocorrelations. As there are 5 holidays and 8 Sundays during the above mentioned law enforcement, totalling 13 days out of 700 observations, we estimate that such a process (or any other procedure) could not affect the statistics.

3.1 Analysis of the graph

Picture 1 shows a spike in sales in the periods around New Year, which will be modelled using a dummy variable (NEW YEAR), the value of which is set to 1 between December 29 and December 31 and 0 otherwise. The time series also exerts a double seasonality. One is easily seen in Picture 2 and shows increased summer sales of beer in accordance with other existing models. This phenomenon will be modelled using the average daily temperature each day.

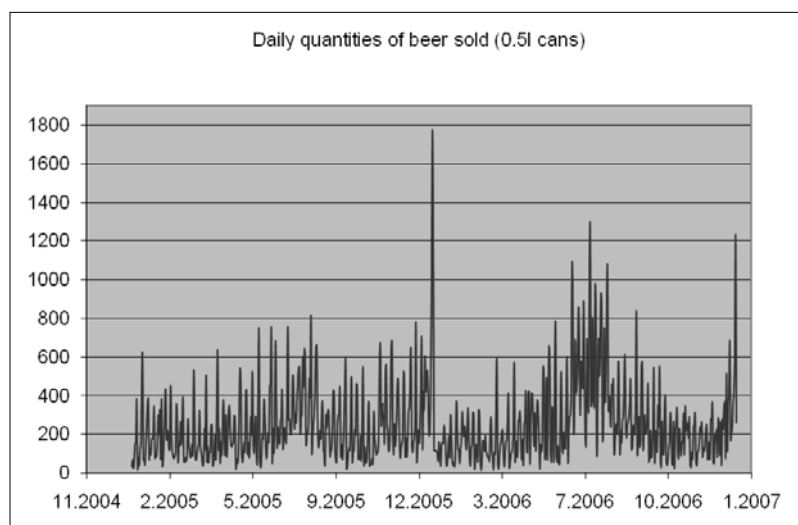


Figure 1: – Daily quantities of beer sold

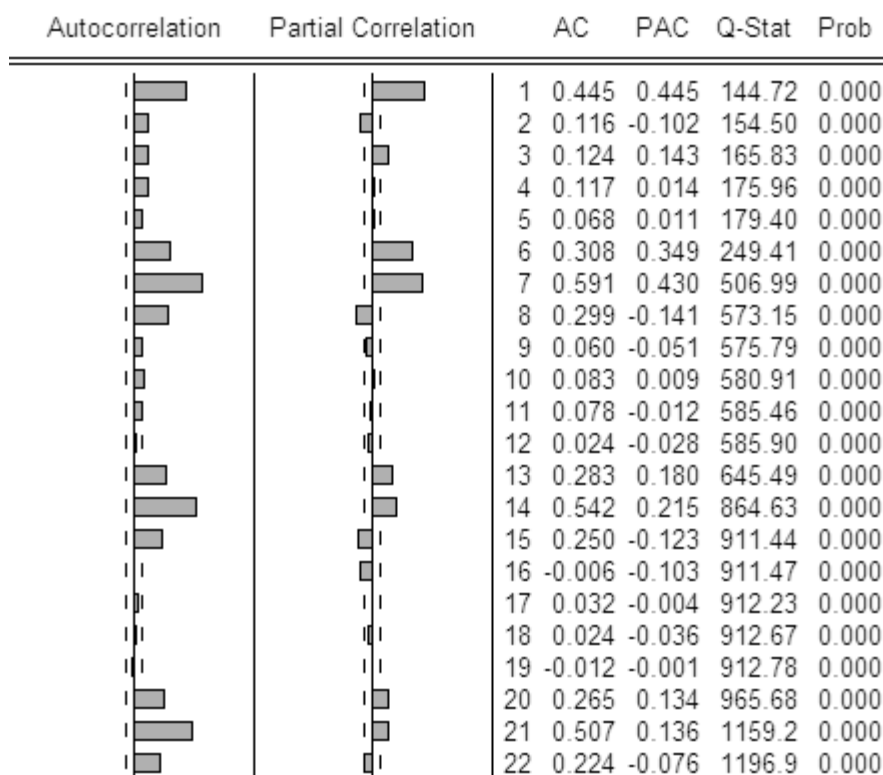


Figure 2: – ACF and PACF functions for the original model

The second seasonal fluctuation we expect from the series is the weekly seasonality i.e. the Sunday sales are similar... Due to daily noise, this is hardly seen with visual inspection. However, by computing the ACF and PACF functions, they can easily be found (Picture 2).

The PACF graph of autocorrelations shows the expected statistical significance for period 7. Spikes at 6 and 8 should also be taken into consideration. Visually, we could assess the univariate ARMA process to be:

$$(1 - L^7)(1 - \phi L)y_t = \mu + (1 - L^7)(1 + \theta L)\varepsilon_t \quad (7)$$

Equation 7 would mean that the daily sales can be estimated by taking the sales a week ago and its shocks 8 and 6 days ago. Equation 7 needs to be tested to determine whether its residuals' PACF and ACF show any significance. Picture 3 shows the PACF and ACF functions for residuals showing no statistically important spikes. Equation 7 can formally be written as an ARMA(1,1) process of the differenced time series of order 7.

3.2 Factors affecting primary demand

Primary demand for beer has been researched extensively by Bourgeois and Barnes (1979), Franke and Wilcox (1987), Leeftang and Van Duijn (1982) and Frasens (1991). Authors use the following as exogenous variables: beer prices, outside temperature, advertising expenditures and the consumer purchasing index. According to Bourgeois and Barnes (1976), advertising has little effect on sa-

Lag	ACF	PACF
1	0.116	0.116
2	-0.086	-0.101
3	-0.047	-0.025
4	-0.022	-0.023
5	-0.084	-0.088
6	-0.053	-0.039
7	0.022	0.017
8	-0.004	-0.025
9	0.014	0.015
10	0.043	0.031
11	0.059	0.046
12	-0.055	-0.061
13	0.032	0.061
14	0.044	0.030
15	-0.009	-0.006

Figure 3: – Modified ACF and PACF model

les. Advertising alcoholic beverages is strictly regulated in most EU countries, diminishing its effect on sales. Furthermore, the Slovenian beer market is dominated by two major brands, accounting for more than 90 % of total market (one of the two brands is analysed here). The preferences of consumers for each brand are geographically spread and there is strong loyalty to each of the two brands (meaning that consumers of one brand would rarely try the other). Such strong preferences for either brand make advertising very inefficient for gaining new

customers. Poor advertising effects have also been confirmed by the marketing managers of both market leaders companies.

All researchers agree that outside temperature is a good estimator for the quantities sold. Most beer is sold during the summer season. This seasonality could be formulated using the difference operator of order 365 (Δ_{365}), but this would halve our data if we use a two years time series. Thus we model the outside temperature using data from government weather statistics. The highest daily temperature in Ljubljana has been used as exogenous variable.

As mentioned, all the other researchers use a wider time span between two points (at least a week) smoothing out any effects of the holidays. Our research, using daily sales, needs to account for any deterministic spikes that could occur. One such spike is certainly New Year's Eve, which we modelled using a dummy variable.

Sales promotions are a proven tool for short term boosts in sales. They usually have a short term impact that lasts for the period of promotion, but can have a long term impact if applied to a nonstationary time series (i.e. a growing market). The sales promotion will be modelled as a pulse function:

$$SALESP = \begin{cases} 0; t < k \\ 1; k \leq t \leq k+l \\ 0; t > k+l \end{cases} \quad (8)$$

According to Hanssens et. al., there is a long term effect from SALESP if the operator's order (Δ) required to differentiate the series to obtain stationarity is greater than 0. The series under observation was on sales promotion from 26.10.05 till 23.12.2005, roughly a month. To test any post-promotion effects, we'll include the terms SALESP(-1) and SALESP(-2) in the regression to see

whether a statistically significant coefficient would confirm any long-term effects. As our time series also behaves stochastically (ARMA), we need to include that behaviour in the regression equation. Putting all the factors into the equations, we get:

$$\begin{aligned} y_t = & \mu + \varphi_1 y_{t-1} + \varphi_7 y_{t-7} + \varphi_8 y_{t-8} + \\ & + \varepsilon_t + \theta \varepsilon_{t-1} + \theta \varepsilon_{t-7} + \theta \varepsilon_{t-8} + \\ & + \delta NEWYEAR + \omega SALESP_t + \omega_1 SALESP_{t-1} + \\ & + \omega_2 SALESP_{t-2} + \lambda TEMPERATURE \end{aligned} \quad (9)$$

Using the least-squares methods, the coefficients are calculated and presented in Picture 4.

All the coefficients are statistically significant except for SALESP and SALESP(-1). After eliminating these two variables, SALESP(-2) also becomes statistically non-significant, which confirms that no long-term effects are to be expected from sales promotions. Only a two day effect could be seen as too short for any meaningful significance and could catch the post-promotion dip effect (diminishing of sales immediately after the price promotion period due to stockpiling). We have tried to regress the sales by several lagged SALESP, but none has significant statistics. By eliminating the SALESP(-1) and SALESP(-2) terms, we get the equation:

$$\begin{aligned} y_t = & 164 + 0.96 \cdot y_{t-1} + 0.98 \cdot y_{t-7} - 0.96 \cdot y_{t-8} + \\ & + \varepsilon_t - 0.84 \cdot \varepsilon_{t-1} - 0.85 \cdot \varepsilon_{t-7} + 0.68 \cdot \varepsilon_{t-8} \\ & + 609 \cdot NEWYEAR + 132 \cdot SALESP + \\ & + 4.93 \cdot TEMPERATURE \end{aligned} \quad (10)$$

Regressor	Coefficient	Std. Error	t-test	prob.
NEWYEAR	624.24	40.45	15.43	0.0000
SALESP	46.51	81.73	0.57	0.5695
SALESP(-1)	-31.89	107.19	-0.30	0.7662
SALESP(-2)	161.35	82.19	1.96	0.0500
TEMPERATURE	5.22	1.08	4.82	0.0000
C	154.35	23.04	6.70	0.0000
AR(1)	0.97	0.01	80.85	0.0000
AR(7)	0.99	0.01	153.68	0.0000
AR(8)	-0.96	0.01	-76.19	0.0000
MA(1)	-0.85	0.03	-32.66	0.0000
MA(7)	-0.83	0.02	-34.77	0.0000
MA(8)	0.70	0.03	20.79	0.0000
R2	0.679744			
Adjusted R2	0.674761			

Figure 4: – Initial model regression analysis

Regressor	Coefficient	Std. Error	t-test	prob.
NEWYEAR	609.32	40.16	15.17	0.0000
SALESP	132.33	43.86	3.02	0.0026
TEMPERATURE	4.93	1.07	4.59	0.0000
C	163.98	21.99	7.46	0.0000
AR(1)	0.97	0.01	76.62	0.0000
AR(7)	0.99	0.01	151.03	0.0000
AR(8)	-0.96	0.01	-71.14	0.0000
MA(1)	-0.85	0.03	-30.66	0.0000
MA(7)	-0.83	0.02	-34.56	0.0000
MA(8)	0.69	0.03	19.92	0.0000
R2	0.678121			
Adjusted R2	0.674046			

Figure 5: – Final model of the ARMAX regressors

The statistics are shown in Picture 5. The demand for the analysed beer is thus dependent on the outside temperature, New Year and the promotional price. R square accounts for 67%. It is interesting to note that sales promotion accounts for a very small proportion of the variance (only 0.8%) and could thus easily be ignored.

It needs to be stressed that the above model is only usable for the time series analysed and could not be generalized to all beer. Also, this brand has only been on promotion once off-season making it impossible to conclude that sales promotion on beer has negligible long term effects.

What is more interesting is to compare our time series analysis with classical regression analysis, thus omitting stochastic trends. We use the least square method with the NEWYEAR, SALESP, TEMPERATURE regressors and a constant to compute the equation:

$$y_t = 117 + 729 \cdot \text{NEWYEAR} + 144 \cdot \text{SALESP} + 7.17 \cdot \text{TEMPERATURE} \quad (11)$$

The statistics are shown in Figure 6. All coefficients are statically relevant, but the explained variance is only

25%. The effect of each single regressor is higher than when using time series analysis, but the relations are quite similar.

4 Conclusion

The article builds a model for forecasting the demand for beer with time series analysis. In the introductory chapter the time series analysis theory is presented with special devotion to univariate time series analysis. Time series are useful for analysing economical variables ordered in series that are equally spaced over time. The Box-Jenkins ARMA model is presented as the basic model for time series analysis, which is upgraded to ARMAX model. Time series techniques are applied to model demand for beer on Slovenian market. It has been shown that this method considerably increases the power of forecasting compared to ordinary regression analysis.

Analysis shows that the primary demand for beer, on a bi-polar market such as Slovenian, is mainly dependent on the seasonality (modelled with outside temperature), price and New Year dummy regressors. Time series analysis determines the true value of the coefficients for these

Regressor	Coefficient	Std. Error	t-test	prob.
NEWYEAR	728.98	57.49	12.68	0.0000
SALESP	144.59	25.41	5.69	0.0000
TEMPERATURE	7.72	0.74	10.49	0.0000
C	117.80	13.51	8.72	0.0000
R2	0.252409			
Adjusted R2	0.249315			

Figure 6: – Regression analysis without the time series

variables by introducing autoregressing and moving average factors. It is shown that, by introducing moving average and autoregression factors, the exogenous demand factors' coefficients (temperature, New Year and price) are adjusted (lowered). Autoregression analysis shows a typical weekly seasonality as well as the dependence of the series on the previous day's sales, which is to be expected.

The attempt to show any long term effects of sales promotions fails, confirming the evidence from other empirical studies on such effects. Traditionally, the effects of a sales promotion are measured on a panel of households using behavioural theory to assess any effects of marketing actions on the consumers' brand choice (Keane 1997, Seetharaman et al. 1999). The majority of models show no long term effects from sales promotions. Newer models (using weekly, monthly, quarterly or yearly data) and our study (using daily data) uses within-store POS data in a time series framework, showing same results. Daily data is particularly useful for studying the dynamics of the sales function when an affecting factor changes rapidly.

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Model povpraševanja po blagovni znamki piva z uporabo analize časovnih vrst

Trženjski raziskovalci pogosto operirajo s podatki, ki so ekvidistančno porazdeljeni v času. Teorija časovnih vrst je primerno orodje za analizo tovrstnih podatkov. Tipično se uporablja za napovedovanje, ugotavljanje vzročnosti pojavov, v trženju pa je največkrat uporabljena pri analizah učinkov diskretnih dogodkov skozi čas. Članek prikaže osnovne koncepte regresijske analize časovnih vrst in predstavi njihovo aplikacijo v trženjskem raziskovanju. S pomočjo analize časovnih vrst postavimo model napovedovanja povpraševanja po znani Slovenski blagovni znamki piva z uporabo POS podatkov z dveh večjih slovenskih hipermarketov. Naša analiza je prva, ki kot podatke zajame dnevno prodajo blagovne znamke (dosedanje so uporabljale širše časovne intervale – tedenska, mesečna ali celo letna prodaja). Slabost dnevne prodaje naj bi predstavljal visok nivo šuma v podatkih. Čeprav vsebujejo podatki veliko nepojasnjene variance, v prispevku pokažemo, da z uporabo časovnih vrst pojasnimo precej več variance kot z uporabo klasične multiple regresije. Analiza časovnih vrst nam tudi pokaže, da so učinki cenovnih akcij, kot enega izmed dejavnikov prodaje, kratkoročni, ter tako potrdi druge raziskave iz področja analiz učinkovitosti cenovnih akcij.

Ključne besede: trženjsko raziskovanje, analiza časovnih vrst, povpraševanje po pivu



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Pregled stanja na področju e-izobraževanja v Sloveniji

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Slovenija na področju uporabe informacijsko-komunikacijskih tehnologij v izobraževanju ter v zavedanju pomembnosti e-izobraževanja zaostaja za drugimi državami Evropske unije. Glede na raziskave, ki so bile v preteklosti pripravljene na tem področju znotraj različnih institucij, lahko povzamemo, da se v Sloveniji pravi razvoj in uporaba e-izobraževanja prazaprav šele pričinja. V prispevku bodo prikazani dosednji razvoj in pomembnejše iniciative na področju e-izobraževanja, stanje uporabe e-izobraževanja v slovenskih podjetjih, visokošolskih in višješolskih institucijah ter trenutno stanje e-izobraževalne ponudbe na slovenskem trgu. Predstavljen bo osnutek Nacionalne strategije e-izobraževanja 2006-2010, katere glavna vizija je do leta 2013 vzpostaviti učinkovit in v celoti informacijsko podprt nacionalni sistem izobraževanja ter tako zagotoviti trajnostno gospodarsko rast, blaginjo in kakovost življenja vseh državljanov RS, hkrati pa postati sinonim za eno najuspešnejših družb na svetu, temelječo na znanju, stalnih inovacijah in hitrem razvoju.

Ključne besede: informacijsko-komunikacijska tehnologija, e-izobraževanje, Nacionalna strategija e-izobraževanja 2006-2010

1 Uvod

Širitev Evropske unije, velika dinamičnost sprememb v svetovnem gospodarstvu, hitre tehnološke spremembe, svetovne mreže z obilico informacij in povečevanje pomena znanja so močno spremenile naše vsakdanje življenjsko okolje. Nahajamo se v t.i. informacijski dobi, kjer nam sodobne informacijsko-komunikacijske tehnologije (IKT) in internet ponujajo neskončne možnosti na vseh področjih našega vsakdanjega dela, vplivajo pa tudi na vrsto in način pridobivanja znanj. E-izobraževanje postaja danes vse pomembnejše in pomeni učenje in poučevanje z izkoriščanjem sodobnih informacijsko-komunikacijskih tehnologij. E-izobraževanje pa ne pomeni samo "elektronsko", temveč tudi bolj "ekonomično", bolj "efektivno", oz. "izboljšano" in "izpopolnjeno". E-izobraževanje torej označuje pridobivanje znanja, kjer sodobna informacijsko-komunikacijska tehnologija delno ali v celoti nastopa kot posrednik med akterji izobraževanja oziroma izobraževalno institucijo, izobraževalcem in izobraževancem. Na tem mestu je treba poudariti, da v strokovni literaturi obstaja veliko različnih definicij e-izobraževanja. Lahko bi celo rekli, da obstaja toliko definicij, kolikor je avtorjev, ki se ukvarjajo z e-izobraževanjem. V ta namen je celotno drugo poglavje tega prispevka namenjeno razjasnitvi nejasnosti v zvezi z opredelitvami tega pojma.

Glede na pretekle raziskave o stanju e-izobraževanja lahko povzamemo, da se v Sloveniji pravi razvoj e-izobraževanja in tudi drugih oblik šele pričinja. Trg ponudnikov storitev in produktov e-izobraževanja se resneje oblikuje šele sedaj, prav tako pa podjetja šele sedaj razmišljajo o resnejšem in celovitejšem uvajanju e-izobraževanja.

Pri praktičnem uveljavljanju e-izobraževanja so še vedno v ospredju ZDA, Kanada in Avstralija. ZDA v e-izobraževanju vidijo prvorazredno poslovno možnost, hkrati pa način učenja in usposabljanja, ki je še posebno primeren za zaposlene. Evropska unija se je na te spremembe odzvala razmeroma pozno. Šele v zadnjih nekaj letih so direktive in smernice EU sprožile več uradnih iniciativ (»eLearning Action Plan«, »eLearning Initiative«, »eLearning Programme«, »i2010«, »eEurope+«), ki dokazujejo, da je vendarle dozorelo spoznanje o nujnosti hitrejšega, odločnejšega in sistematičnejšega prilagajanja izobraževalne politike in izobraževalne ponudbe, kar je vse bolj potrebno zaradi novih družbenih in tehnoloških okoliščin ter zaradi spremenjenih potreb na trgu dela in gospodarskega okolja (Arh, 2005).

Uvedba in razvoj e-izobraževanja sta v prvi vrsti odvisna od tehnološkega razvoja, ta pa od političnega interesa oz. vladnih in regionalnih pobud. Upoštevati je treba celovito dejavnost, kot so želje, zahteve in potrebe tako izobraževancev kot izobraževalcev, prilagoditev učnih procesov in učnih gradiv, dodatna usposabljanja, vsebinsko in

tehnološko podporo, prilagoditev obstoječe regulative in drugo. Vsi ti dejavniki se lahko pojavijo kot pospeševalci ali zaviralci razvoja e-izobraževanja. Da bi bili v čim večji meri spodbujevalci razvoja, posamezna telesa in službe EU sprejemajo različne direktive, smernice in dokumente, katerim bolj ali manj uspešno sledijo vse članice EU. Skladno s temi direktivami mora tudi Slovenija sprejeti smernice, ki jo bodo vodile in spodbujale pri doseganju zastavljenih nacionalnih in ciljev EU. Krovni dokument – **Strategija razvoja informacijske družbe v Republiki Sloveniji (si2010)** – je bil sprejet konec meseca junija 2007. Strategija razvoja informacijske družbe v RS pomeni krovno usmeritev slovenske vlade na tem področju do leta 2010. Po svoji zgradbi sledi evropski pobudi i2010, v kateri so predstavljene poglobitve strateške usmeritve Evropske unije. Poleg evropskih usmeritev Strategija razvoja informacijske družbe v RS upošteva tudi vse pomembne nacionalne strateške dokumente. Strategija na podlagi ciljev i2010 opredeljuje ustrezna načela delovanja in konkretna področja delovanja, podrobnejšo obravnavo posameznih področij (konkretni cilji, kazalniki in ukrepi) pa prepušča področnim strategijam in akcijskim načrtom, ki jih z vidika države oblikujejo posamezna ministrstva. **Nacionalna strategija e-izobraževanja 2006-2010**¹, kot ena izmed področnih strategij, ki je nastala leta 2006 in še čaka na javno obravnavo ter potrditev na vladi, sledi več ključnim nacionalnim ciljem v obdobju 2006–2013², kot so trajnostno povečanje blaginje in kakovosti življenja ali povečanje globalne konkurenčnosti s spodbujanjem inovativnosti in podjetništva ter z učinkovitim vlaganjem v izobraževanje, usposabljanje, raziskave in razvoj. Osnutek Nacionalne strategije e-izobraževanja opredeljuje več strateških področij, katerih ukrepi bodo zagotovili hitrejši razvoj e-izobraževanja v Sloveniji, povečan nivo znanja med prebivalstvom ter posledično boljšo konkurenčnost tako posameznikov kot celotne slovenske družbe.

V nadaljevanju prispevka so predstavljene različne opredelitve e-izobraževanja, dosednji razvoj e-izobraževanja v Sloveniji in nekaj preteklih iniciativ na tem področju.

2 Opredelitev e-izobraževanja

Opredelitev koncepta e-izobraževanja in nadaljnjih pojmov, povazenih z e-izobraževanjem, najprej zahteva natančno definicijo pojma e-izobraževanje. Opredelitev e-izobraževanja je toliko bolj potrebna zato, ker v teoriji in praksi naletimo na precej raznolika in raznovrstna ter neenotna pojmovanja e-izobraževanja. Pojem se je skozi čas precej spreminjal, še vedno pa se vzporedno uporabljajo izrazi kot so: izobraževanje na daljavo (angl. *Open Distance Learning*), spletno izobraževanje (angl. *Web Ba-*

sed Training), računalniško podprto izobraževanje (angl. *Computer Based Training*), tehnološko podprto izobraževanje (angl. *Technology Based Learning*) in on-line izobraževanje (angl. *On-line Learning*). Našteti pojmi pa nimajo istega pomena. E-izobraževanje je veliko širši pojem kot on-line izobraževanje, ki je uporabljeno zgolj za uporabo internet/intranet/LAN/WAN izobraževanja, kar pomeni, da izključuje uporabo CD-ROM-a. Spletno izobraževanje lahko opredelimo kot ponudbo formalnega in neformalnega izobraževanja ter usposabljanja, z njimi povezanih aktivnosti, procesov, skupnosti in dogodkov, ki poteka preko uporabe elektronskih medijev, kot so internet, intranet, CD-ROM, DVD, TV, telefon ipd.

S pojmom e-izobraževanje razumemo celovito informacijsko podporo izobraževalnemu procesu (Dinevski, Plenković, 2002), torej pridobivanje znanja, kjer informacijsko-komunikacijska tehnologija delno ali v celoti nastopa kot posrednik med akterji izobraževanja oziroma izobraževalno institucijo, izobraževalcem in izobraževancem. Uveljavljeni angleški izrazi v strokovni literaturi (Lockwood et al., 2001; Keegan D., 1991; Stephenson, 2001) so *Open, Distance, Flexible, Distributed e-learning*. Vsak ima nekoliko drugačen pomen, čeprav so vsi izrazi precej sorodni. UNESCO (Moore et al., 2002) v splošnem uporablja izraz "*Open and Distance Learning*", pri čemer ima "*Open Learning*" nekakšen krovni pomen za vse izobraževalne sisteme, ki sistematično odstranjujejo različne ovire pri dostopu do izobraževanja, pa naj se nanašajo na čas, prostor, starost, spol, tehnologijo ipd. V programih in akcijskih načrtih Evropske komisije je od leta 2000 dalje v uporabi termin *e-learning*. V slovenščini se v zadnjih nekaj letih večinoma uporablja izraz *e-izobraževanje*, kot eden izmed prevodov izraza *e-learning*. V praksi se velikokrat govori tudi o *e-učenju*, kar seveda izhaja iz angleškega prevoda *e-learning*. Glede na to, da je učenje povezano z aktivnostjo posameznika, je e-izobraževanje e-učenju nadrejen pojem, saj gre za izobraževanje, ki ga s pomočjo informacijske tehnologije izvaja izobraževalna institucija, ki organizira izobraževanje in učečim se nudi podporo.

Enotne, splošno sprejete definicije, kaj je e-izobraževanje, ni. E-izobraževanje predstavlja izobraževanje, ki poteka ločeno od mesta poučevanja in zato zahteva specifične tehnike načrtovanja izobraževalnih gradiv, poučevanja (pedagoški koncepti), komunikacije s pomočjo informacijsko-komunikacijskih tehnologij (IKT) ter posebne pristope k ureditvi vseh organizacijskih in administrativnih zadev.

Kirschner in Paas (2001) označujeta e-izobraževanje kot učenje, kjer ima internet najpomembnejšo vlogo pri podajanju, podpiranju, upravljanju in ocenjevanju učenja. V literaturi pa se pojavlja tudi definicija »integriranega« e-izobraževanja, ki se v povezavi z bolj konvencionalnimi

¹ Ker Strategija še čaka na javno obravnavo ter potrditev na vladi, lahko govorimo samo o osnutku Nacionalne strategije e-izobraževanja.

² Uvod v strateško presojo Državnega razvojnega programa (DRP) na trajnostni razvoj, 2005, <http://www.svlrpgov.si/index.php?id=1148>.

metodami navezuje na raznolikost med seboj povezanih pedagoških, organizacijskih in tehnoloških sistemov, ki predstavljajo predpogoj za uspešno izvajanje e-izobraževanja.

Nekateri strokovnjaki ga razumejo še v širšem smislu kot izobraževanje, v katerem ima pomembno vlogo uporaba sodobne informacijske in telekomunikacijske tehnologije in služi predvsem obogatitvi tradicionalnega, klasičnega izobraževanja. Takšna opredelitev je v teoriji in praksi precej pogosta, a je za naše potrebe preveč ohlapna, saj bi to pomenilo, da so v e-izobraževanje vključeni praktično vsi udeleženci izobraževalnega procesa, ki kakorkoli uporabljajo IKT ne glede na namen in intenzivnost uporabe.

Treba je poudariti, da e-izobraževanje popolnoma ne izključuje tradicionalnih oblik poučevanja. Le-te se lahko pojavljajo kot dopolnilne in v relativno omejenem obsegu. E-izobraževanje se namreč od t.i. kombinacije on-line in off-line izobraževanja (angl. *Blended learning*) razlikuje po večji pomembnosti e-komponente (npr. integracija računalniške infrastrukture, sistemi za upravljanje e-izobraževanja, izobraževalna gradiva).

3 Razvoj e-izobraževanja v Sloveniji

Na nacionalni ravni so na področju e-izobraževanja potekale različne aktivnosti že od leta 1996. V tem obdobju so se sredstva vlagala predvsem v informacijsko infrastrukturo (npr. terminalno opremo – osebni računalniki) po slovenskih osnovnih in srednjih šolah, le manjši delež pa je bil namenjen vsebinskim komponentam e-izobraževanja. V tem smislu lahko izpostavimo le program **Računalniško opismenjevanje (RO)**³, katerega rezultat so bile razvite vsebine, vendar brez večje tehnične in druge podpore, predvsem pa brez evalvacije in validacije. Program je leta 2002 zamrl, nadaljevanje financiranja pa se je odražalo znotraj Ciljnih raziskovalnih projektov (CRP), katerih rezultat je bila predvsem teoretična podlaga in strateški dokumenti, ki niso nikoli zaživel, saj ni bilo zadosti sistemske institucionalne podpore.

V letu 1999 je bil, podobno kot v ostalih državah v zahodni Evropi, ugotovljen vse večji prepad med tistimi učitelji, ki so IKT usvojili kot del življenja in del šole, in tistimi, ki IKT niso uporabljali niti za svoje delo, še manj pa pri delu z učenci. V letu 2000 je bil pripravljen načrt za nov preskok, za katerega kasneje niso bila zagotovljena ustrezna sredstva, še manj pa novi organizacijski modeli za izvajanje informatizacije šolstva na višjem nivoju. Bili pa so zagotovljeni pogoji za vzdrževanje stanja na vseh

treh področjih: izobraževanje učiteljev, opremljanje vzgojno-izobraževalnih zavodov ter raziskovanje in razvoj. Proces informatizacije šolstva v Sloveniji in tudi v večini ostalih evropskih držav še vedno živi vzporedno z običajnim življenjem vzgojno-izobraževalnih zavodov (VIZ) in se izvaja parcialno. Projekt informatizacije šolstva je treba podpirati, da ne bi prišlo do stagnacije trenutnih vidnih rezultatov, vendar pa je treba koordinacijo dejavnosti vse bolj prenašati na posamezna predmetna in strokovna področja.⁴

Sredi devetdesetih let je začela delovati **Nacionalna projektna enota** (NCP) za študij na daljavo na Ekonomski fakulteti v Ljubljani, ki je poskušala v Sloveniji zagotavljati ustrezne razmere na državni ravni za razvijanje e-izobraževanja kot sodobne in učinkovite oblike izobraževanja. Ustanovljen je bil **Center za e-izobraževanje in vseživljenjsko učenje Univerze v Mariboru**⁵, ki nudi svetovalne in tehnične storitve s področja e-izobraževanja in študija na daljavo vsem pedagoškim delavcem Univerze, po dogovoru pa tudi drugim izobraževalnim ustanovam. Naloga centra je zagotavljati strokovnost študijskega procesa na daljavo, transformacijo učnega gradiva in zagotavljanje kakovosti tehničnih storitev pri izvajanju tovrstnih študijskih programov. V tem kontekstu omenjamo še **Laboratorij za telekomunikacije Fakultete za elektrotehniko Univerze v Ljubljani** (LTFE⁶). V sodelovanju s podjetjem Iskratel je bil v okviru Laboratorija razvit integrirani sistem za izobraževanje na daljavo ECHO (<http://dl.ltfe.org>), ki je uporabljen v različnih ustanovah in podjetjih (Telekom Slovenije, Mobitel, osnovne šole ipd.).

Na Ministrstvu za šolstvo in šport (MŠŠ) so pred poletjem 2006 pripravili analizo stanja informatizacije šolstva. Slovenija je bila ena izmed prvih evropskih držav, ki je leta 1993 zagotovila pogoje za dolgoročni sistematični preskok na področju uporabe IKT pri poučevanju in učenju.⁷

Državni zbor RS je leta 2002 sprejel direktivo o razglasitvi zakona o temeljnih razvojnih programih na področju izobraževanja in znanosti v letih 2003–2008 (ZTRPIZ) in se zavezal, da bo za izvajanje zakona namenil skoraj 168 milijard SIT (700 mio EUR). Med razvojne programe spada tudi informacijsko-komunikacijska pismenost, za katero naj bi v teh šestih letih namenili skoraj 27 milijard SIT (112 mio EUR).⁸

4 Pretekle raziskave o stanju e-izobraževanja v Sloveniji

O stanju e-izobraževanja v Sloveniji je bilo v preteklih letih pripravljenih kar nekaj raziskav. Če se najprej osredoto-

³ Slovensko izobraževalno omrežje. Program Ro, <http://ro.zrsss.si/>, 18. 7. 2006.

⁴ Analiza stanja informatizacije šolstva (2006). Svet za informatizacijo šolstva.

⁵ Center za e-izobraževanje in vseživljenjsko učenje Univerze v Mariboru, <http://eizobrazevanje.uni-mb.si/>, 1. 12. 2005.

⁶ LTFE - http://www.ltfe.org/sola/demo/Os_mat/index.html.

⁷ Slovensko izobraževalno omrežje. Program Ro, <http://ro.zrsss.si/>, 18. 7. 2006.

⁸ <http://ai.ijs.si/mezi/sindikat/ztrpiz.htm>, 28. 7. 2006.

točimo na e-izobraževanje v slovenskem šolstvu, je bila leta 2005 pripravljena raziskava z naslovom **“E-izobraževanje 2005/2006 – visokošolski in višješolski zavodi”** (Vehovar et al., 2006). Za osnovnošolsko in srednješolsko stopnjo sta bili pripravljene raziskavi **“Stanje in trendi uporabe informacijsko-komunikacijske tehnologije (IKT) v slovenskih osnovnih šolah”** (Gerlič, 2005) in **“Stanje in trendi uporabe informacijsko-komunikacijske tehnologije (IKT) v srednjih šolah”** (Gerlič, 2006). Nekaj rezultatov iz prve raziskave (Vehovar et al., 2006) predstavljamo v nadaljevanju.

4.1 E-izobraževanje v visokošolskih in višješolskih zavodih

V zimskem semestru 2005/2006 je bila med 85 zavodov terciarnega izobraževanja v Sloveniji izvedena pisemska anketa o e-izobraževanju, na katero je odgovorilo 79 zavodov. Med vsemi 85 zavodi sicer prevladujejo javni zavodi v okviru univerz, kljub temu pa imamo 34 enot terciarnega izobraževanja v organizacijah izven fakultet oziroma univerz, 24 zasebnih in 36 višješolskih zavodov.

Enoto opazovanja je predstavljal posamezen visokošolski zavod, za katerega nas je zanimala raba informacijske tehnologije, še posebej uvedba ali uvajanje e-izobraževanja. Na vprašalnik je odgovarjal/a prodekan/ja za študijske zadeve oziroma oseba, ki je odgovorna za uvajanje/uporabo e-izobraževanja na zavodu.

Skupno gledano je enak delež zavodov, kjer je vprašalnik izpolnil prodekan za študijske zadeve oz. izobraževanje (46 %) in zavodov, kjer je vprašalnik izpolnil nekdo drug (46 %). Na 8 % vseh zavodov je anketni vprašalnik izpolnil dekan fakultete. Kot zanimivost lahko omenimo,

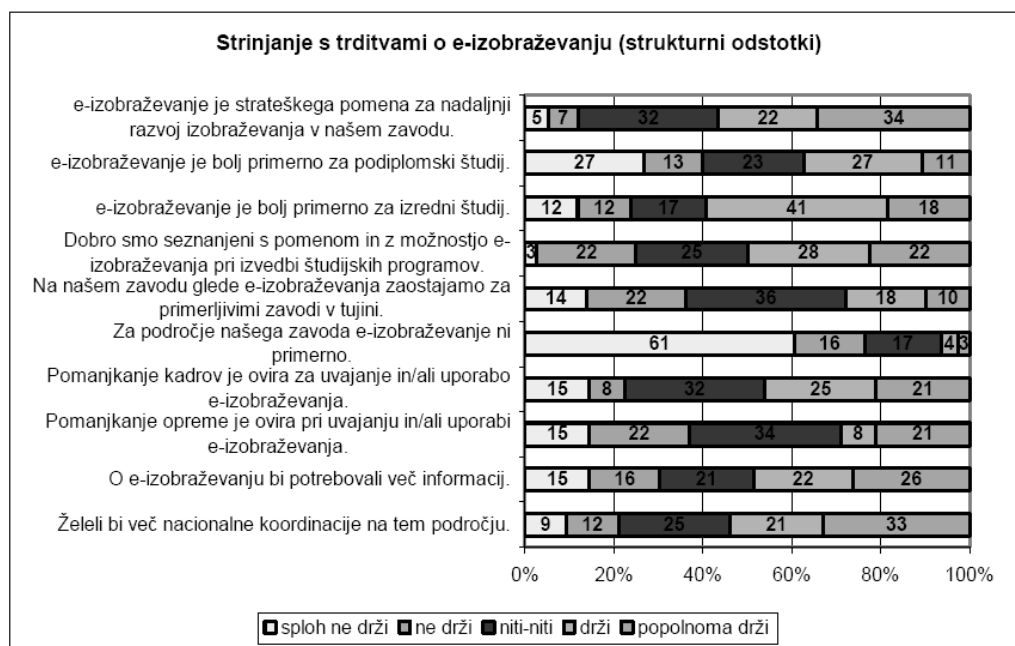
da imata dva zavoda zaposlene ljudi izrecno za uvajanje/uporabo e-izobraževanja. Ostale metodološke značilnosti, ki opredeljujejo zanesljivost, veljavnost in primerljivost rezultatov so podrobneje predstavljene v dokumentu E-izobraževanje 2005/2006 – visokošolski in višješolski zavodi (Vehovar et al., 2006).

■ Odnos do e-izobraževanja

Dobra tretjina (34 %) zavodov se popolnoma strinja s trditvijo, da je e-izobraževanje strateškega pomena za nadaljnji razvoj izobraževanja v zavodu (slika 1). Na tem mestu je treba poudariti, da **e-izobraževanje pomeni izobraževanje, kjer so delno ali v celoti nadomeščena neposredna srečanja s študenti (ure vaj, predavanj, ipd.) z učenjem v elektronski obliki**. Kar polovica zavodov se je izjasnila, da so dobro seznanjeni s pomenom in z možnostjo e-izobraževanja pri izvedbi študijskih programov. Zanimivo, s stališča razvoja e-izobraževanja pa tudi nadvse razveseljivo je dejstvo, da je kar 61 % zavodov mnenja, da trditve o neprimernosti e-izobraževanja za njihov zavod, ne drži. Tretjina zavodov je popolnoma prepričanih, da bi si na tem področju želela več nacionalne koordinacije.

■ Visokošolski zavodi glede na e-izobraževanje

Polovica zavodov na samostojnih fakultetah že ima e-izobraževanje, glede na lastnino je delež tistih, ki imajo e-izobraževanje večji na zasebnih zavodih (33 %), kot na javnih (29 %) (slika 2). Največji delež zavodov, ki z e-izobraževanjem nadomeščajo neposredne stike s študenti med univerzami je v Mariboru (46 %), nato na Primorskem (40 %), na Univerzi v Ljubljani pa temu področju zaenkrat posvečajo manj pozornosti (le 17 % zavodov na tej Univerzi ima e-izobraževanje). Največji delež zavodov, ki pa o e-izobraževanju niso niti razmišljali je na področju humanistike, morda zato, ker je na teh zavodih študij



Slika 1: Delež zavodov glede na strinjanje s trditvami o e-izobraževanju (Vehovar et al., 2006)



Slika 2: Delež zavodov glede e-izobraževanja na zavodu – po različnih vrstah zavodov (Vehovar et al., 2006)

drugačne narave in se vodstvu zdi učenje na daljavo težje izvedljivo.

4.2 E-izobraževanje odraslih

Na Andragoškem centru Slovenije so v začetku leta 2006 predstavili rezultate raziskave o **pregledu študija na daljavo za odrasle v Sloveniji** (Zagmajster, 2006). Podatki so bili zbrani s pomočjo Pregleda ponudbe izobraževanja in učenja odraslih v šolskem letu 2005/2006, baze Andragoškega centra, kjer lahko ponudniki izobraževanj predstavijo svoje programe, in s pomočjo raziskave spletnih virov. Razumevanje e-izobraževanja v tej raziskavi temelji na naslednji opredelitvi e-izobraževanja (Zagmajster, 2006):

- *prostorska ločitev* učitelja in udeleženca izobraževanja (kar e-izobraževanje loči od tradicionalnega izobraževanja);
- *aktivna vloga izobraževalne organizacije* v izobraževalnem procesu (kar e-izobraževanje loči od samostojnega učenja);
- *uporaba elektronskega medija* za predstavitev oz. posredovanje izobraževalne vsebine (običajno preko spleta);
- *zagotovitev dvosmerne komunikacije preko elektronskega omrežja* (udeleženci izobraževalnega procesa komunicirajo med seboj, z učitelji in drugim osebjem izobraževalne organizacije običajno s pomočjo interneta).

Ta opredelitev obravnava e-izobraževanje kot *sodobno in način študija na daljavo*, katerega temeljna značilnost je prostorska ločenost učitelja in udeleženca v izobraževalnem procesu in pri kateri se tako za predstavitev vse-

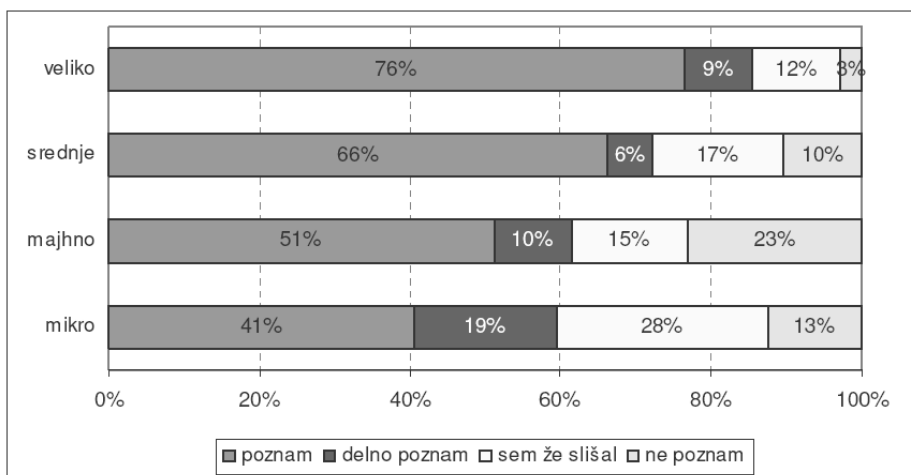
bine kot za komuniciranje uporablja internet (Zagmajster, 2006).

Izmed ponudnikov, ki so predstavili svoje programe, je največ ponudnikov e-izobraževanja v osrednje-slovenski regiji (36,4 %), nobenega pa ni na Koroškem, v Pomurju in na Notranjsko-kraškem. Med predstavljenimi programi prevladujejo programi splošnega neformalnega izobraževanja (79,09 %), sledijo programi za pridobitev izobrazbe (19,09 %), najmanj pa je programov usposabljanja za delo (1,82 %). Med neformalnimi programi prevladujejo e-tečaji tujih jezikov in programi računalniškega usposabljanja, pri javno veljavnih pa poleg višješolskih programov za poslovnega sekretarja in komercialista še višješolski programi za promet, strojništvo, komunalo in elektroniko.

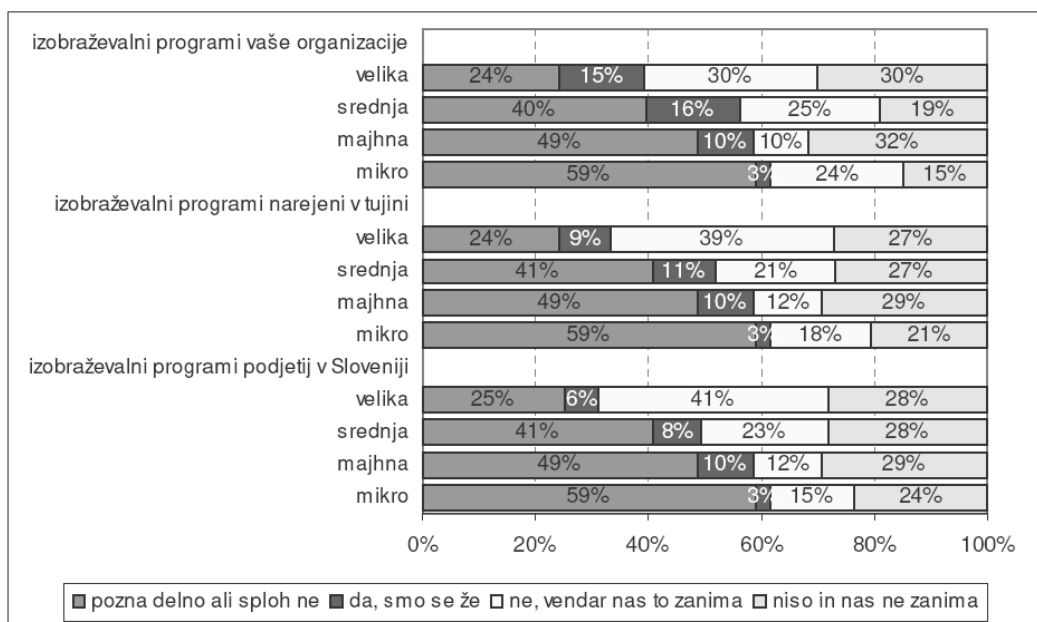
4.3 E-izobraževanje v podjetjih

O stanju e-izobraževanja v slovenskih podjetjih je bila leta 2005 pripravljena raziskava: **“Izobraževanje in e-izobraževanje – podjetja (RIS 2005)”** (Vehovar et al., 2005).

Reprezentativna telefonska anketa RIS 2005 je bila izvedena med 713 slovenskimi podjetji v juniju 2005. Odgovarjali so vodje informatike ali direktorji. Stopnja odgovora za velika podjetja je znašala 50 %, za srednja 52 %, za majhna 37 % ter za mikro 33 %. Vprašanje o e-izobraževanju je bilo postavljeno v najširšem smislu, zato so z ožjega vidika aktivnosti e-izobraževanja nekoliko preceunjene. Razmeroma visoke ocene o obsegu e-izobraževanja za Slovenijo pa potrjujejo tudi podatki Eurostat. Izhodišče za vzorčni okvir so predstavljala podjetja v poslovnem registru Statističnega urada Republike Slovenije



Slika 3: Podjetja glede na velikost: »Poznate pojem e-izobraževanje oziroma on-line izobraževanje?« (Vehovar et al., 2005; n=34, 86, 39, 32)



Slika 4: Podjetja glede na velikost: »Ali so se vaši zaposleni na tak način že izobraževali? (Velja za podjetja, ki se že slišala za e-izobraževanje (Vehovar et al., 2005; n=33, 73, 41, 34; 33, 71, 41, 34; 31, 71, 41, 34))

(SURS), ki so v bilanci za leto 2004 izkazovala določen promet pri Agenciji za plačilni promet. Osnovne metodološke značilnosti, ki opredeljujejo zanesljivost, veljavnost in primerljivost rezultatov so podrobneje predstavljene v dokumentu *Podjetja 2005 – Izobraževanje in e-izobraževanje* (Vehovar et al., 2005).

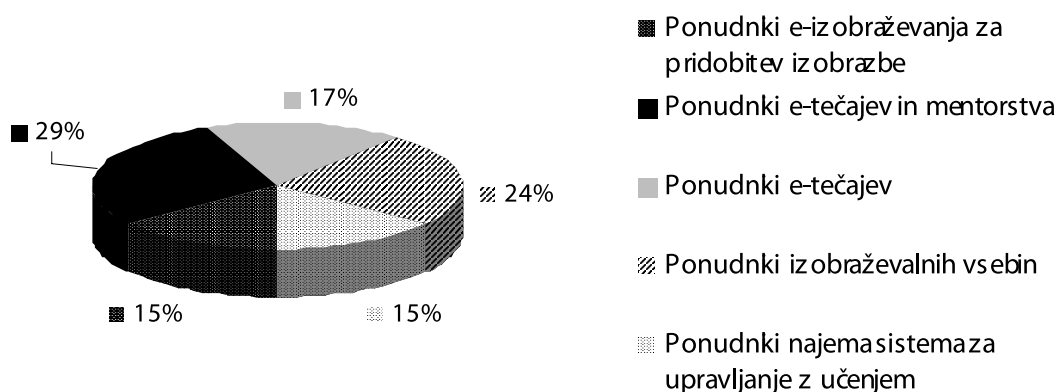
■ Poznavanje pojma e-izobraževanje

Poznavanje pojma e-izobraževanje (slika 3) narašča z velikostjo podjetja, saj ta pojem pozna tri četrtine (76 %) velikih, dve tretjini (66 %) srednje velikih ter polovica (51 %) majhnih podjetij. Le pri mikro podjetjih je opaziti, da jih manj kot polovica (41 %) poroča o seznanjenosti s tem pojmom. Delež podjetij, ki so odgovorila, da tega pojma ne poznajo, je najmanjši pri velikih podjetjih, pri podjetjih

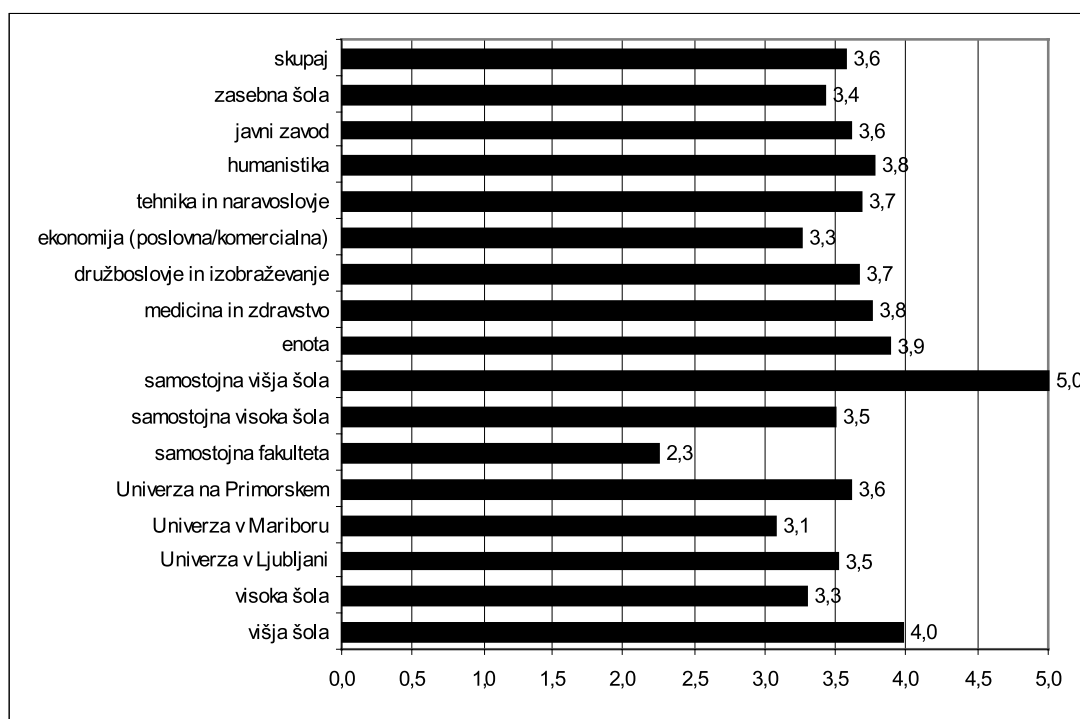
srednje in mikro velikosti se giblje okrog ene desetine, največji pa je pri majhnih podjetjih (23 %).

■ Uporaba e-izobraževanja

Zaposleni v velikih podjetjih so se največ e-izobraževali v programih lastnega podjetja (15 %), desetina velikih podjetij je svoje zaposlene izobraževala že tudi v tujih programih, nekaj manj (6 %) pa v okviru programov, ki jih na trgu ponujajo različna podjetja v Sloveniji (slika 4). Za srednja podjetja so ti deleži nekoliko višji – izmed podjetij ločenih po velikosti najdemo največji delež (22 %) takih, ki so svoje zaposlene že izobraževala v okviru lastnih programov, prav med srednjimi podjetji – opaziti pa je trend padanja teh deležev v istem zaporedju kot pri velikih podjetjih.



Slika 5: Struktura ponudbe e-izobraževanja v Sloveniji (Arh et al., 2006)



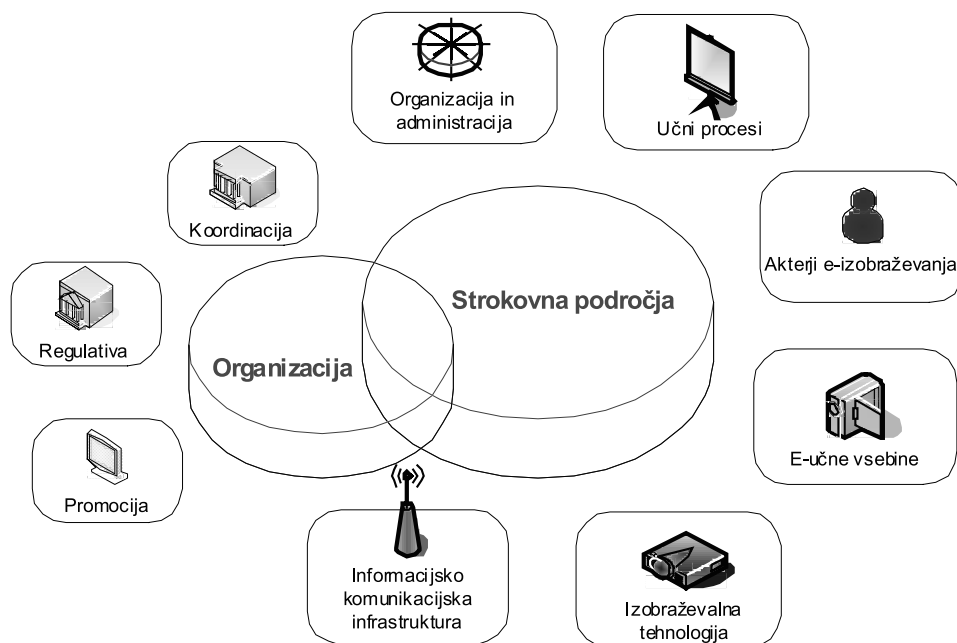
Slika 6: Nacionalna koordinacija na tem področju (Vehovar et al., 2006)

4.4 Struktura ponudbe e-izobraževanja

Na Institutu »Jožef Stefan« je bila v začetku leta 2006 opravljena še ena raziskava (Arh et al., 2006) in sicer o strukturi ponudbe in storitev e-izobraževanja v Sloveniji, katere namen je bil oceniti trenutni položaj trga e-izobraževanja v Sloveniji, identificirati različne oblike e-izobraževanja in opredeliti strukturo ponudbe e-izobraževanja. Z analizo anketnih vprašalnikov so bile definirane različne kategorije ponudbe e-izobraževanja v Sloveniji. Ugotovljeno je bilo, da prevladuje ponudba e-tečajev in mentorstva ter ponudba specialnih izobraževalnih vsebin, ki so razvite posebej za posamezna poslovna področja (računalništvo in informatika, marketing, računovodstvo, davki in zakonodaja, jeziki, etc). Razmerje med posameznimi

identificiranimi skupinami je prikazano na sliki 5, iz katere je razvidno, da v slovenskem prostoru prevladujejo ponudniki e-tečajev in mentorstva, sledijo ponudniki izobraževalnih vsebin, ponudniki e-tečajev in na koncu ponudniki e-izobraževanja za pridobitev formalne izobrazbe ter ponudniki najemasistema za upravljanje e-izobraževanja.

Raziskava je pokazala, da je Slovenija kljub počasnemu razvoju na tem področju v zadnjih letih napredovala pri ponudbi e-izobraževanja. Predvsem velja omeniti napredek na področju storitev, ki nam ponujajo pridobitev formalne izobrazbe. Eden izmed pomembnejših vzrokov za vedno več ponudnikov za pridobitev formalne izobrazbe je verjetno posledica dejstva, da se formalno v večji meri izobražujejo mlajši ljudje, ki so bolj dovtetni za sodobno informacijsko in komunikacijsko tehnologijo. Ved-



Slika 7: Predvidena strateška področja osnutka Nacionalne strategije e-izobraževanja (Kokalj et al., 2006)

no več je tudi ponudnikov e-tečajev in mentorstva ter ponudnikov najrazličnejših izobraževalnih vsebin.

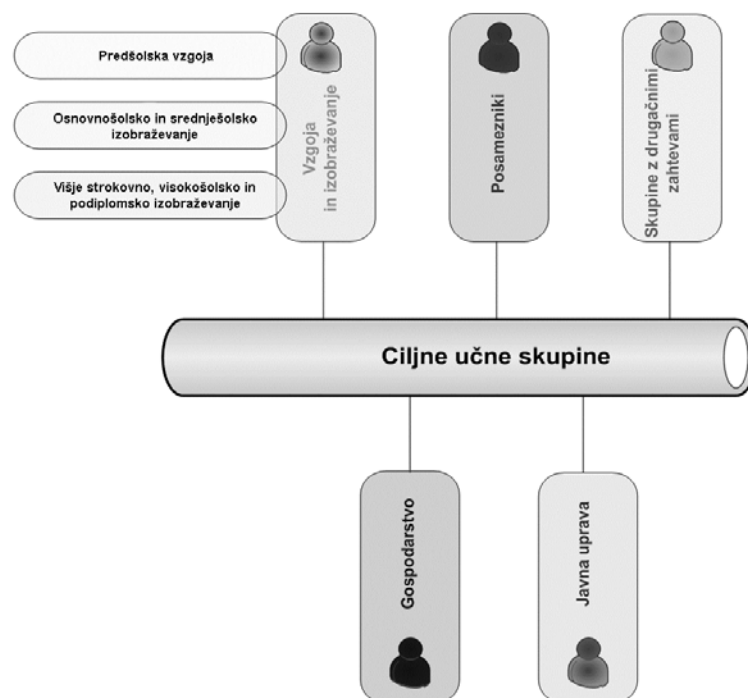
Osnutek Nacionalne strategije e-izobraževanja 2006-2010, ki bo predstavljen v nadaljevanju, se opira na izsledke predstavljenih raziskav. Ne glede na ugotovitve raziskav pa so si najrazličnejši ponudniki in uporabniki e-izobraževanja enotni, da se e-izobraževanje v Sloveniji sicer razvija, a ne ciljno usmerjeno in koordinirano, rezultati ostajajo znotraj posameznih izvajalcev, temu primerno pa se javna sredstva iz tega naslova porabljajo preveč nena-

menko in brez vidnejših učinkov. To potrjuje tudi naslednja slika, ki prikazuje, da si visokošolske institucije želijo več nacionalne koordinacije na tem področju.

Glede na raziskave o stanju e-izobraževanja iz preteklih let lahko povzamemo, da se v Sloveniji pravi razvoj e-učenja in tudi drugih oblik šele pričinja. Trg ponudnikov storitev in produktov e-izobraževanja se resneje oblikuje šele sedaj, prav tako pa podjetja šele sedaj razmišljajo o resnejšem in celovitejšem uvajanju e-izobraževanja.



Slika 8: Predvidena sestava medresorske Agencija za e-izobraževanje (Kokalj et al., 2006)



Slika 9: Obravnavane ciljne učne skupine (Kokalj et al., 2006)

5 Nacionalna strategija e-izobraževanja 2006-2010

Glavna vizija osnutka Nacionalne strategije e-izobraževanja 2006-2010 je do leta 2013 vzpostaviti enega najučinkovitejših in v celoti informacijsko podprtih nacionalnih sistemov izobraževanja ter tako zagotoviti trajnostno gospodarsko rast, blaginjo in kakovost življenja vseh državljanov RS, hkrati pa postati sinonim za eno najuspešnejših družb na svetu, temelječo na znanju, stalnih inovacijah in hitrem razvoju. Nacionalna strategija e-izobraževanja sledi vsem petim razvojnim prioritetam Strategije razvoja Slovenije (SRS)⁹. Še posebej je strategija e-izobraževanja usmerjena v uresničevanje druge razvojne prioritete "Izboljšanje kakovosti izobraževanja in spodbujanje vseživljenjskega učenja".

5.1 Strateška področja

Ker je e-izobraževanje interdisciplinarna veda, katere uspešen razvoj je odvisen od celovitega in usklajenega izvajanja ukrepov tako znotraj različnih strokovnih kot tudi organizacijskih področij, Strategija jasno opredeljuje organizacijska in strokovna strateška področja, ki so prikazana na sliki 7.

Organizacijska strateška področja so:

1. Koordinacija e-izobraževanja

2. Regulativa
3. Promocija znanja in
4. **Strokovna strateška področja** (organizacija in administracija, učni procesi, izobraževanci in izobraževalci, e-učne vsebine, izobraževalna tehnologija in informacijsko-komunikacijska infrastruktura)

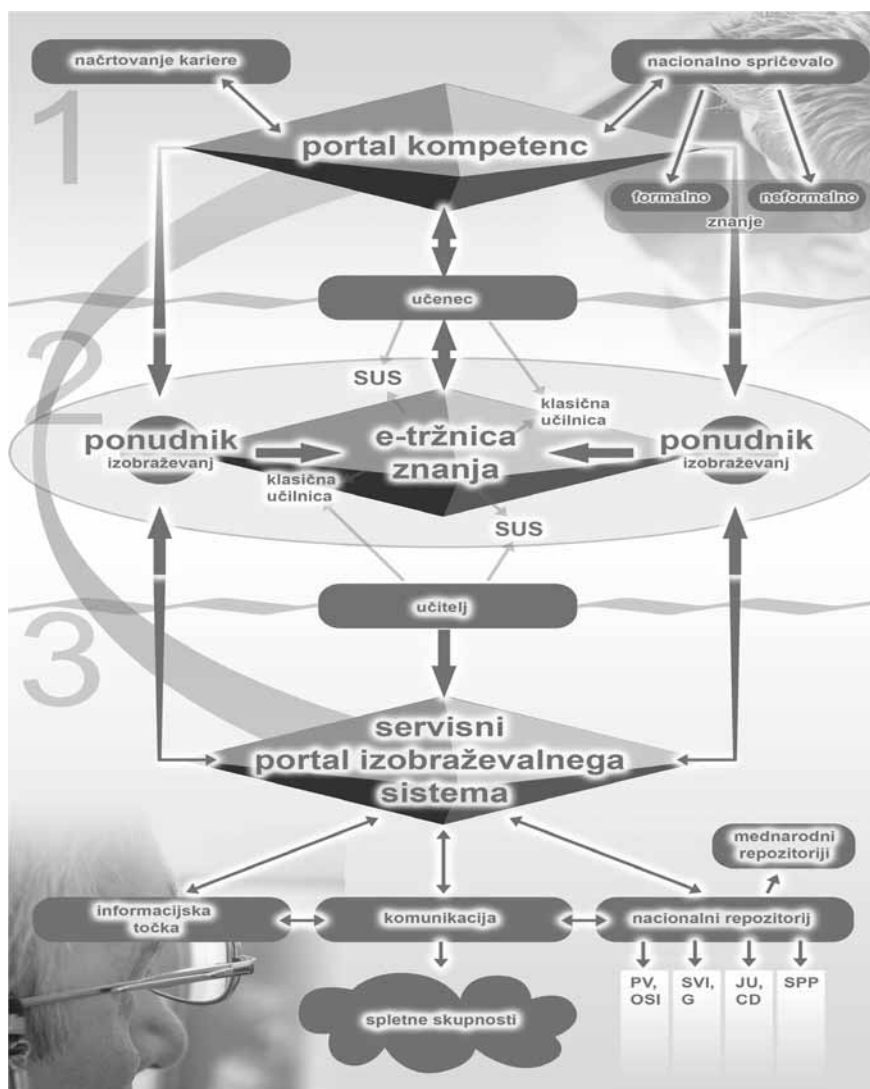
Za vsako od strokovnih strateških področij je predvidena posebna ekspertna skupina, ki bo skrbela za strokovni vidik izvajanja ukrepov z namenom kvalitetnega in učinkovitega uresničevanja ciljev Nacionalne strategije e-izobraževanja 2006-2010. Za potrebe uresničevanja ciljev Strategije bo predvideno odgovorna na novo ustanovljena medresorska **Agencija za e-izobraževanje**, ki jo bodo sestavljale naslednje službe in organi: upravni odbor, direktor in podporne službe, strokovni svet in strokovna delovna telesa (slika 8).

Poleg samih organov Agencije za e-izobraževanje velja omeniti tudi **zunanje izvajalce** posameznih projektov inčasne **neodvisne strokovne komisije** za izbor teh izvajalcev v okviru javnih razpisov.

5.2 Ciljne učne skupine

Nacionalna strategija e-izobraževanja je v okviru petih ciljnih učnih skupin usmerjena na izpolnjevanje zastavljenih ciljev za potrebe vseh državljanov RS. Izvajanje strategije bo vključevanje v proces vseživljenjskega učenja ob

⁹ Strategija razvoja Slovenije, www.slovenijajutri.gov.si.



Slika 10: Model informatizacije nacionalnega sistema izobraževanja (Kokalj et al., 2006)

podpori e-izobraževanja omogočilo prav vsakemu prebivalcu RS.

Učni procesi se razlikujejo od ene do druge ciljne učne skupine in za posamezna strokovna učna področja. Skladno s tem je različna tudi stopnja vključevanja IKT v učne procese izobraževanja posameznih učnih skupin. Načeloma se stopnja vključenosti veča od predšolske vzgoje do visokošolskega izobraževanja in naprej. Še zlasti v primeru izobraževanja odraslih naj bi bila zaradi časovne obremenjenosti odraslih stopnja podpore IKT pri izobraževanju izjemno visoka oziroma naj bi večina izobraževanja že potekala v obliki e-izobraževanja.

Stopnja vključevanja IKT v poučevanje določene učne skupine je odvisna od cele vrste dejavnikov, kot so digitalna pismenost, dostopnost računalniške tehnologije, didaktična primernost uporabe izobraževalnih tehnologij in podobno.

Ne glede na stopnjo vključevanja IKT v učne procese posameznih učnih skupin pa je obstoječa praksa že pokazala, da uporaba izobraževalne tehnologije povečuje uspeh izobraževanja prek vseh ciljnih učnih skupin, če je le uporabljena pravilno in v pravi meri.

5.3 Vzpostavitev nacionalnega informacijskega sistema izobraževanja

Vzpostavitev nacionalnega informacijskega sistema izobraževanja je obsežen in tehnološko zahteven projekt, katerega načrtovanje, izgradnja in uporaba posledično zahtevajo izvajanje dodatnih ukrepov in projektov. Projekt se bo začel izvajati kot prvi ukrep izvajanja Nacionalne strategije e-izobraževanja.

Večnivojski model informatizacije nacionalnega sistema izobraževanja sestavljajo tri med seboj povezane

komponente: (1) **nacionalni portal kompetenc – prvi nivo**, (2) **nacionalna elektronska tržnica znanja – drugi nivo** in (3) **nacionalni podporni portal e-izobraževanja – tretji nivo**. Te komponente pokrivajo vse načrtovalce, razvijalce, ponudnike in izvajalce storitev izobraževanja tako v javnem kot zasebnem sektorju. Prav tako vse te komponente pokrivajo potrebe po formalnih in neformalnih znanjih vseh ciljnih učnih skupin.

Celovit nacionalni informacijski sistem izobraževanja vsakemu uporabniku omogoča samo enkratni vpis oziroma elektronsko identifikacijo za uporabo storitev vseh dostopnih portalov. Predstavlja centralno vstopno točko vseh ciljnih učnih skupin, ponudnikov in drugih deležnikov, kakorkoli vključenih v ukrepe izvajanja Nacionalne strategije e-izobraževanja.

Slovenija bi z vzpostavitvijo tovrstnega nacionalnega sistema izobraževanja postala ena vodilnih držav pri informatizaciji izobraževanja in posledično država z enim najkvalitetnejših in edinstvenih sistemov izobraževanja nasploh.

6 Strategije uvajanja e-izobraževanja v svetu

Veliko članic EU ima že dalj časa izdelane strategije e-izobraževanja ter posledično namenja veliko pozornosti in finančnih sredstev v ciljno usmerjeno informatizacijo šolstva ter izobraževanje nasploh. S proučevanjem praktičnih izkušenj teh držav pri uvajanju e-izobraževanja in z upoštevanjem obstoječe izobraževalne strukture v Sloveniji, je mogoče proces uvedbe e-izobraževanja bistveno pospešiti, najprej pa sploh izhajati iz ugotovitev tujih držav pri postavitvi nacionalne strategije e-izobraževanja.

Med drugimi, imajo strategijo e-izobraževanja imajo opredeljeno na Norveškem¹⁰, Veliki Britaniji¹¹, Irskem¹² in Avstriji¹³. Vse te strategije povzemajo ključne elemente strateških usmeritev v prej omenjenih evropskih dokumentih in direktivah, kot so Lizbonska strategija, i2010, e-Learning Action Plan in eEurope+ ter si prizadevajo za čimprejšnjo vzpostavitev dovolj zmogljivega omrežja IKT z vsemi podpornimi storitvami, s pomočjo katerih bo moč

doseči napredek v poslovanju, izobraževanju in vseživljenjskem učenju.

Skandinavske države veljajo za vodilne na svetu, tako na področju izobraževanja kot tudi na področju izobraževanja s pomočjo IKT. Med seboj so povezane prek portala Nordic Schoolnet¹⁴.

Mnoge druge države članice EU so že vzpostavile spletne portale za podporo e-izobraževanju, npr. Virtual School¹⁵ na Finskem, Educational Portal¹⁶ v Grčiji, SchoolNet¹⁷ na Švedskem ali Bildung v Avstriji¹⁸. Cilj teh portalov je povezava učiteljev in izobraževalnih institucij, izmenjava informacij, učnih metod in e-učnih vsebin, obveščanje o dogodkih in novostih ter zagotavljanje storitev in metod e-izobraževanja.

Zelo pomemben del strategij uvajanje e-izobraževanja so primerno usposobljeni učitelji. Mnogo držav temu namenja veliko pozornosti. V Franciji, Grčiji, Italiji, na Madžarskem, Finskem in Norveškem je osnovno znanje IKT obvezno za vse učitelje. Nadaljnje usposabljanje pa je odvisno od različnih izobraževalnih institucij.

V Avstriji že od leta 2000 teče veliko nacionalno koordiniranih projektov in aktivnosti v zvezi z informatizacijo šolstva. Izjemno veliko pozornosti se namenja spodbujanju razvoja e-učnih vsebin, nadaljnjemu usposabljanju učiteljev in njihovem povezovanju. Avstrija je izjemno dober primer celovitega uvajanja e-izobraževanja na nacionalnem nivoju.

Na Finskem je Ministrstvo za šolstvo uvedlo program OPE.fi¹⁹, ki skrbi za nadaljnje usposabljanje učiteljev za uporabo IKT pri poučevanju. Ministrstvo učiteljem pomaga tudi pri razvoju e-učnih vsebin, ki so brezplačno dostopne vsem zainteresiranim.

V Franciji je za spodbujanje uporabe IKT med učitelji, za njihovo usposabljanje ter gradnjo in razširjanje e-učnih vsebin pooblaščen The Department of Information and Communication Technology in Education²⁰.

V Italiji teče projekt Fortic²¹, katerega cilj je usposabljanje učiteljev za didaktično uporabo IKT. Na Madžarskem izvajajo podoben projekt, The Digital Knowledge Base Project²², katerega pobudnik je Ministrstvo za šolstvo. Poglavitni cilj projekta je usposabljanje učiteljev za uporabo IKT, decentralizacijo gradnje e-učnih vsebin in vključevanje privatnega sektorja v e-izobraževanje.

¹⁰ Norveška nacionalna strategija: eNorway 2009 - The digital leap. http://odin.dep.no/filarkiv/254956/eNorway_2009.pdf

¹¹ Britanska nacionalna strategija za e-izobraževanje: eStrategy: Harnessing Technology: Transforming learning and children's services. <http://www.dfes.gov.uk/publications/e-strategy/>

¹² Irška nacionalna strategija za e-izobraževanje: eLearning research and Development: Roadmap for Ireland http://www.ncirl.ie/downloads/research_and_innovation/SFI_reportFINAL.pdf

¹³ Avstrijski portal za e-izobraževanje - Bildung. <http://www.bildung.at/statisch/bmbwk/de/startseite.ihtml>

¹⁴ Nordic Schoolnet. <http://www.nordiskol.org>

¹⁵ Insights, http://insight.eun.org/ww/en/pub/insight/misc/country_report.cfm.

¹⁶ Educational Portal: grški izobraževalni portal <http://www.e-yliko.gr/indexen.htm>.

¹⁷ The Swedish Schoolnet, <http://www.skolutveckling.se/skolnet/english/index.html>

¹⁸ Avstrijski portal za e-izobraževanje - Bildung. <http://www.bildung.at/statisch/bmbwk/de/startseite.html>

¹⁹ Etälukio, Finski portal za e-izobraževanje, <http://www.opf.fi/etalukio/english.html>.

²⁰ Vir: Insights, http://insight.eun.org/ww/en/pub/insight/misc/country_report.cfm

²¹ Italijanski portal Fortic <http://www.fortic.net/>

²² Vir: Insights, http://insight.eun.org/ww/en/pub/insight/misc/country_report.cfm

Večina dostopnih podatkov o uporabi IKT pri izobraževanju temelji predvsem na stopnji uporabe interneta v različnih izobraževalnih institucijah. V Franciji ima do stop do interneta že 98 % srednjih šol, 89 % osnovnih šol in 61 % vrtcev. Na Madžarskem naj bi do leta 2005 širokopasovni internet uporabljale vse šole, v Italiji 80 % šol, v Veliki Britaniji pa 95 % srednjih šol²³.

Posamezne države članice EU spodbujajo uporabo IKT v izobraževanju s projekti subvencioniranja nakupa računalniške tehnologije. V Italiji so npr. leta 2003 za potrebe spodbujanja uporabe IKT pri učenju vsem otrokom z dopolnjenim 16. letom starosti podarili 175 € za nakup osebnega računalnika, v Franciji pa študentom ponujajo možnost, da si za 1000 € kupijo prenosni računalnik z možnostjo brezžičnega priklopa na internet znotraj študentskega okoliša²⁴.

V Združenih državah Amerike, deželi z najrazvitejšim sistemom e-izobraževanja, izkoriščanjem njegovih prednosti ter izjemno dobro opremljenostjo z infrastrukturo IKT, se oblikujejo veliki konzorciji za načrtovanje strategij in modelov e-izobraževanja. Med najvplivnejše se uvršča SETDA – State Educational Technology Directors Associations, ki združuje direktorje za izobraževalne tehnologije iz vseh držav članic ZDA, predstavnike U. S. Department of Education in nekaterih največjih ponudnikov storitev e-izobraževanja v ZDA. Namen SETDA je neprestano iskanje novih načinov in metod, kako s pomočjo IKT še bolj izboljšati učinkovitost učenja in poučevanja. Leta 2005 so v ta namen oblikovali šest delovnih skupin, od katerih vsaka pokriva svoje strateško področje proučevanja²⁵.

7 Zaključek

E-izobraževanje se je kot oblika usposabljanja v slovenskih podjetjih, šolah, fakultetah ipd. najbolj razvilo v zadnjih nekaj letih. Razmah različnih oblik e-izobraževanja je v veliki meri tudi posledica porasta ponudbe različnih e-izobraževalnih storitev in sistemov po vsej Evropi ter razpisanih projektov na to temo iz sredstev Evropske unije in strukturnih skladov. Na tem mestu je treba poudariti, da danes tehnologija ni več izključujoči dejavnik, saj so na trgu dostopni že razviti brezplačni sistemi za upravljanje e-izobraževanja. Implementacija in učinkovita uporaba e-izobraževanja je danes odvisna predvsem od pravega izbora tehnologije in izobraževalne vsebine.

Pomen raziskav, ki so bile v preteklosti izvedene v Sloveniji in svetu, je v predstavitvi trenutnega stanja e-izobraževalne ponudbe in potencialov, ki se nanašajo na razvoj e-izobraževalnega trga za podjetja, organizacije in visokošolske institucije.

V Sloveniji obstaja že kar nekaj ponudnikov storitev e-izobraževanja, kar je posledica hitrega razvoja interne-

ta. Obstaja več dokončanih projektov, raziskav, zgrajenih e-učnih vsebin, razvitih izobraževalnih tehnologij in različnih strokovnjakov s področja e-izobraževanja. Kljub temu pa opaznejšega razvoja in uporabe e-izobraževanja še vedno ni mogoče zaslediti. Iz znanih primerov dobre prakse je razbrati, da e-izobraževanje pospešuje doseganje zastavljenih izobraževalnih ciljev. Rezultati dobrih in slabih praks pa žal večinoma ostajajo pri posameznih izvajalcih, ki imajo različne poglede na vlogo, vpliv in samo funkcijo e-izobraževanja.

E-izobraževanje je ena izmed prioritetenih nalog Ministrstva za visoko šolstvo, znanost in tehnologijo, pri čemer je e-izobraževanje mišljeno v najširšem smislu, tako pri sami aplikativni podpori, pripravi digitalnih gradiv, kot tudi v smislu komunikacij in povezav. Glavna usmeritev je strateški dokument i2010, ki je nastal na nivoju Evropske unije in definira bistvene poudarke pri razvoju informacijske družbe. Vloga in glavni namen Nacionalne strategije e-izobraževanja 2006-2010 pa je na državni ravni regulirati, usmerjati in spodbujati razvoj e-izobraževanja v Sloveniji, s ciljem povečanja gospodarske rasti, konkurenčnosti slovenske družbe in kvalitete življenja vseh državljanov Republike Slovenije.

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Fakulteti za organizacijske vede v Kranju. Že kot študent je delal v Središču za elektronsko poslovanje in se pozneje tam tudi zaposlil. Od leta 2000 je eden od ustanoviteljev podjetja Nevron d.o.o., v katerem je zaposlen kot direktor. S sodelovanjem v mnogih domačih in tujih projektih ima bogate izkušnje s področja storitev e-izobraževanja, s katerim se profesionalno ukvarja že več kot osem let. Je velik pobudnik medsebojnega povezovanja pri izvedbi skupnih projektov z domačimi in tujimi organizacijami, kar zagotavlja visoko kvaliteto opravljenega dela in hitro izmenjavo medsebojnega znanja ter izkušenj.

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Participacija poslovnih računovodij v procesu strateškega managementa: medpanožna primerjava

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Vloga poslovnih računovodij v procesu strateškega managementa je bila tradicionalno omejena na posredovanje koristnih informacij njihovim uporabnikom. V zadnjih dveh desetletjih pa se je njihova vloga v podjetjih močno spremenila. Sodobni računovodje niso več zgolj pripravljalci informacij, ampak za razliko od tradicionalnih aktivno sodelujejo v celotnem procesu sprejemanja odločitev. Cilj študije je preučiti stopnjo participacije poslovnih računovodij v procesu strateškega managementa v večjih slovenskih podjetjih. Rezultati raziskave na podlagi vzorca 193 podjetij kažejo, da so slovenski poslovni računovodje na splošno relativno močno vključeni v proces strateškega managementa, da pa se stopnja participacije po panogah precej razlikuje. Stopnja participacije poslovnih računovodij v procesu strateškega managementa je relativno visoka v predelovalnih dejavnostih, trgovini in gostinstvu, relativno nizka pa v dejavnostih oskrbe z energijo, plinom in vodo ter gradbeništvu.

Ključne besede: Participacija računovodij, Strateški management, Strateško poslovno, računovodstvo, Slovenija

1 Uvod

Na področju poslovnega računovodstva smo v zadnjih dveh desetletjih lahko pričali pravi renesansi (Cravens in Guilding, 2001). S holističnega vidika sta vidni dve glavni smeri razvoja discipline. Na eni strani se zelo hitro razvijajo nove strateško-orientirane računovodske tehnike za obvladovanje stroškov, za potrebe planiranja, kontrole in merjenja uspešnosti ter za ovrednotenje strateških odločitev (Guilding et al., 2000; Ittner in Larcker, 2001; Chenhall, 2008). Po drugi strani se hkrati z razvojem novih tehnik vse bolj uveljavlja prepričanje, da se naloga sodobnih poslovnih računovodij ne sme ustaviti zgolj pri posredovanju koristnih informacij, ampak je značilnost sodobnega računovodja tudi aktivno sodelovanje v celotnem procesu odločanja (Oliver, 1991; Bromwich, 2000; Nyomori et al., 2001; Korošec, 2003; Parker in Kyj, 2006; Rowe et al., 2008). Nekateri avtorji (Guilding et al., 2000; Hoque, 2001; Roslender in Hart, 2003) menijo, da so spremembe v disciplini tako velike, da jih lahko združimo kar pod okrilje nove discipline, imenovane strateško poslovno računovodstvo.

Če je Kaplan (1984) še pred dobrima dvema desetletjema trdil, da se poslovno računovodstvo razvija preveč izolirano od ostalih disciplin in zato izgublja svoj pomen v organizacijski strukturi, se danes tak opis zdi neustrezen (Chenhall, 2008; Rowe et al., 2008). Vse večja konkuren-

nost in nepredvidljivost poslovnega okolja je mnoga podjetja vzpodbudila, da so v ospredje svoje strategije postavila zadovoljevanje potreb kupcev (Perrera et al, 1997; Guilding in McManus, 2002). Tej strategiji so se prilagodile tudi organizacijske strukture in procesi podjetij. Tradicionalne navpične funkcijske organizacijske strukture so se pričele opuščati, nadomeščajo pa jih »vodoravno« povezane aktivnosti iz verige vrednosti (Chenhall, 2008). V »vodoravnih organizacijah« strateške odločitve sprejemajo managerski teami sestavljeni iz članov z različnih funkcijskih področij, vključno s poslovnimi računovodji (Baines in Langfield-Smith, 2003; Naranjo-Gil in Hartmann, 2007; Rowe et al., 2008).

Izhajajoč iz opisanih trendov ima študija dva glavna cilja. Prvi cilj je preučiti stopnjo participacije poslovnih računovodij v procesu strateškega managementa oziroma odločanja v večjih slovenskih podjetjih. V tujini opravljene empirične študije kažejo, da so poslovni računovodje v ZDA (Fern in Tipgos, 1988) in Veliki Britaniji (Bhimani in Keshtvarz, 1999) relativno močno vključeni v različne aktivnosti v okviru procesa strateškega managementa, v Sloveniji pa podobne raziskave še ni bilo. Drugi cilj je preučiti morebitne razlike v stopnji participacije po panogah. Kontingenčna teorija, ki je na področju poslovnega računovodstva v zadnjem času izrazito prevladala (Naranjo-Gil in Hartmann, 2007), pravi, da morajo biti organizacijske strukture in procesi prilagojeni okolju in spe-

cifičnim dejavnikom podjetja (Chenhall, 2003; Gerdin, 2005). Ker so empirične študije (Anderson in Lanen, 1999; Mia in Clarke, 1999) pokazale, da je pomemben dejavnik pri oblikovanju primerne sistema poslovnega računovodstva dejavnost podjetja, želimo ugotoviti, kako dejavnost podjetja vpliva na stopnjo participacije računovodij v procesu strateškega managementa. Iz opredeljenih ciljev izhaja, da je študija eksplorativne narave.

Študija je razdeljena na pet poglavij. Uvodu sledi poglavje, v katerem opišemo teoretični koncept participacije poslovnih računovodij v procesu strateškega managementa. V tretjem poglavju je predstavljena raziskovalna metodologija, v četrtem pa rezultati raziskave v večjih slovenskih podjetjih. V zadnjem poglavju so podane sklepne ugotovitve in diskusija rezultatov.

2 Participacija poslovnih računovodij v procesu strateškega managementa

Poslovno računovodstvo se je tradicionalno ukvarjalo s pripravo informacij, ki managerjem pomagajo pri planiranju, kontroliranju in sprejemanju odločitev (Kaplan in Atkinson, 1989; Turk et al., 1998). Čeprav obseg poslovnega računovodstva ni omejen s formalnimi kriteriji, se njegove naloge navadno delijo v tri skupine (Anderson in Lanen, 1999; Turk et al., 1998):

- ugotavljanje stroškov proizvodov in drugih stroškovnih nosilcev
- priprava informacij za planiranje, kontrolo in ocenjevanje uspešnosti
- priprava informacij za ovrednotenje odločitev.

Strateški management lahko opredelimo kot proces managerskih odločitev in aktivnosti, ki določajo dolgoročno poslovanje podjetja in podjetje umestijo v okolje (Porter, 1996; Pučko, 2006). V normativnih učbenikih iz strateškega managementa je ta proces navadno razdeljen na več faz, kot so analiza okolja, razvoj strategije (strateško planiranje), uresničevanje strategije in strateška kontrola (Hunger in Wheelen, 1996; Thompson in Strickland, 2003; Pučko, 2006). Za strateške odločitve je značilno, da (1) imajo pomemben učinek na podjetje kot celoto, (2) pomembno vplivajo na dolgoročno uspešnost, (3) so tvegane in (4) zahtevajo medfunkcijsko sodelovanje (Papadakis in Barwise, 1997; Kramberger in Rosi, 2007).

V drugi polovici osemdesetih let prejšnjega stoletja so mnogi priznani avtorji (Kaplan, 1984; Johnson in Kaplan, 1987; Ashton et al., 1991; Drury, 1992; Palmer, 1992; Bhimani in Bromwich, 1992) ocenili takratno stanje poslovnega računovodstva kot krizno, saj naj ne bi bilo več sposobno tvorno sodelovati pri doseganju strateških ciljev podjetja (Kaplan, 1984; Bromwich in Bhimani, 1994). V grobem bi lahko kritike razdelili v dve skupini. Prvič, tako imenovano tradicionalno poslovno računovodstvo se je ukvarjalo predvsem z operativnimi problemi, kar ga je postavljalo v podrejen položaj glede na ostale oddelke, na primer trženje (Roslender in Hart, 2003). Druga kritika

pa se nanaša na dejstvo, da je bila vloga računovodij v procesu odločanja tradicionalno omejena na posredovanje koristnih informacij managerjem, ki so sprejemali odločitve, medtem ko pri sprejemanju odločitev niso sodelovali.

Če so poslovni računovodje v takih razmerah želeli povečati ali vsaj zadržati svoj pomen v organizacijski hierarhiji, so bili pravzaprav prisiljeni razviti »neko višjo« obliko računovodstva (Roslender et al., 1998). Pri tem so jim šle na roko tudi okoliščine. Razvoj informacijske tehnologije je omogočil, da so postale tradicionalne rutinske naloge računovodij v veliki meri avtomatizirane, zato so imeli več časa, da se začnejo ukvarjati z vsebinskimi izziivi. Kot slikovito pravi Oliverjeva (1991), so »dnevi debetov in kreditov v računovodstvu minili«.

Hiter razvoj poslovnega računovodstva v zadnjih dveh desetletjih kaže, da so sodobni poslovni računovodje spremenjene okoliščine in zahteve vzeli resno in se jim dokaj uspešno prilagodili. Če je bilo tradicionalno poslovno računovodstvo usmerjeno na posredovanje pretežno notranjih in v preteklost obrnjenih informacij managerjem (Cravens in Guilding, 2001), je področje delovanja sodobnih poslovnih računovodij precej širše. Danes njihova informacijska usmerjenost sega izven meja podjetja in predvsem v prihodnost (Guilding et al., 2000; Chenhall, 2008), hkrati pa se njihova vloga ne konča pri posredovanju informacij managerjem (Nyamori et al., 2001; Rowe et al., 2008). Približno sočasno z navedenimi spremembami se je začel uporabljati tudi pojem »strateško poslovno računovodstvo«. Ta naj bi označeval, da je sodobno poslovno računovodstvo orientirano predvsem na potrebe strateškega managementa oziroma predstavlja odziv računovodij, ki bi tako kot druge funkcije radi sodelovali pri strateških zadevah (Nyamori et al., 2001). Seveda pa to od njih zahteva, da se na novo opredeli tudi njihova vloga v podjetju. Od strateških računovodij se pričakuje aktivno sodelovanje v procesu odločanja, ne več zgolj samo posredovanje relevantnih informacij managementu (Oliver, 1991; Coad, 1996; Bromwich, 2000). Sodelovanje v celotnem procesu sprejemanja odločitev je torej ključna razlika med »tradicionalnim« in »strateškim« poslovnim računovodjem (Bhimani in Keshtvarz, 1999; Nyamori et al., 2001).

Koncept participacije poslovnih računovodij v procesu strateškega managementa temelji na tesnem partnerstvu z neračunovodskim osebjem (Oliver, 1991; Palmer, 1992; Bromwich, 2000; Chenhall, 2008; Rowe et al., 2008), v katerem se združijo vse funkcijske sposobnosti podjetja z namenom izboljšanja procesa odločanja. Naravna vloga računovodij naj bi bila koordinacija posameznih funkcij in ravni managementa v podjetju (Parker in Kyj, 2006; Rowe et al., 2008), saj jim dostop do široke baze informacij daje celovit vpogled v poslovanje podjetja, ki ga druge funkcije običajno nimajo. Računovodje so imeli Palmerjevemu mnenju (1992) za svojo »novo« vlogo zelo dobro izhodišče. Posedujejo namreč paket finančnih sposobnosti in znanj, dostop do različnih virov informacij in poznavanje finančne strukture podjetja, ki naj bi bil ključen za ovrednotenje različnih strateških alternativ.

Na novo opredeljena vloga poslovnih računovodij v podjetjih pa od njih zahteva tudi povsem praktične spremembe v vedenju in vzorcih razmišljanja. Potrebne značilnosti, ki »strateškega« računovodjo ločijo od »tradicionalnega«, naj bi tako bile (Oliver, 1991; Coad, 1996; Hočevar in Ogan, 1996): (1) proaktivnost pri analiziranju poslovnih izzivov in sposobnost povezati te izzive s finančnimi in drugimi posledicami, (2) tržna orientiranost, to je sposobnost svetovanja svojim odjemalcem (managerjem), (3) zaradi potrebe po dobrem poznavanju podjetja in okolja, stalna motiviranost k učenju in povečevanju znanja, pogosto na področjih, ki nimajo nobene zveze s tradicionalnim računovodstvom in nenazadnje, (4) zaradi svoje vloge povezovalca, dobre komunikacijske sposobnosti. Ali kot na kratko pravi Coad (1996), strateški poslovni računovodja je lahko le nekdo, ki se na nerutinske izzive odziva pozitivno in kreativno.

Empirične raziskave o participaciji poslovnih računovodij v procesu strateškega managementa so redke tudi v tujini. Fern in Tipgos (1988) sta v svoji raziskavi velikih podjetij v ZDA že pred 20 leti ugotovila, da je participacija poslovnih računovodij v procesu strateškega managementa »presenetljivo velika«, saj več kot 75 % anketiranih računovodij bolj ali manj aktivno sodeluje pri aktivnostih v okviru procesa strateškega managementa (kot so npr. oblikovanje poslanstva, oblikovanje strateških ciljev, razvoj in izbira najboljše strategije, pretvorba strategij v predračune). Podobno študijo sta desetletje kasneje opravila Bhimani in Keshtvarz (1999) med britanskimi velikimi podjetji ter prišla do podobnih zaključkov.

Podjetja se bodo v prihodnosti srečevala s še bolj kompleksnimi izzivi in turbulentnim okoljem, čemur se bo moral prilagajati tudi računovodski sistem. Ker so računovodje izrazili željo po večji vpletenosti v proces strateškega managementa (Fern in Tipgos, 1988; Bhimani in Keshtvarz, 1999; Nyamori et al., 2001), je to zanje hkrati priložnost in obveza. Sestavni člen v procesu odločanja bodo postali le, če bodo dovolj prepričljivi, da v procesu lahko dodajo neko vrednost (Oliver, 1991). To pa je v ve-

liki meri odvisno od njih samih (Palmer, 1992; Roslender et al., 1998; Nyamori et al., 2001).

3 Metodologija raziskovanja

3.1 Raziskovalna vprašanja

Prvi cilj raziskave je preučiti stopnjo participacije slovenskih poslovnih računovodij v procesu strateškega managementa. Ker nimamo primerne osnove, na podlagi katere bi utemeljili pričakovano stopnjo participacije, je raziskovalno vprašanje eksplorativne narave. Glede na opredeljeno ključno razliko med »tradicionalnimi« in »strateškimi« poslovnimi računovodji nas zanima predvsem, ali so slovenski poslovni računovodje pretežno pripravljalci informacij, ali pa jih lahko uvrstimo med aktivne udeležence managerskih teamov in procesov odločanja.

Drugi cilj je ugotoviti in preučiti morebitne razlike v stopnji participacije po panogah. Anderson in Lanen (1999) ter Mia in Clarke (1999) so ugotovili, da je razvitost poslovnega računovodstva po panogah različna, zato v skladu z njihovimi ugotovitvami postavljamo naslednjo hipotezo - *participacija poslovnih računovodij v procesu strateškega managementa se po panogah razlikuje*. Razlike po panogah želimo tudi podrobneje preučiti, vendar bo zaradi pomanjkanja teoretičnih osnov za postavitev morebitnih hipotez o pričakovanih razlikah ta analiza eksplorativne narave.

3.2 Metoda zbiranja podatkov in postopek vzorčenja

Za zbiranje podatkov je bil uporabiljen anketni vprašalnik, ki je bil poslan v večja slovenska podjetja. Pri izbiri podjetij v vzorec smo izhajali iz baze 500 največjih slovenskih podjetij po prihodkih, ki jo je pripravilo Podatkovno

Tabela 1: Struktura podjetij v vzorcu in vzorčnem okviru glede na dejavnost

Dejavnost z SKD oznako	Frekvenca	Delež v vzorcu v %	Delež v vzorčnem okviru v %
A – Kmetijstvo, gozdarstvo	1	0,5	1,0
C – Rudarstvo	2	1,0	0,5
D – Predelovalne dejavnosti	108	56,0	53,1
E – Oskrba z energijo, plinom, vodo	10	5,2	4,4
F – Gradbeništvo	9	4,7	6,7
G – Trgovina	30	15,5	17,8
H – Gostinstvo	6	3,1	1,8
I – Promet, skladiščenje, zveze	13	6,7	5,2
J – Finančno posredništvo	8	4,1	5,2
K – Poslovanje z nepremičninami	4	2,1	2,6
O – Druge javne in oskrbne dejavnosti	2	1,0	1,0
Skupaj	193	100,0	100,0

analitično središče Ekonomske Fakultete v Ljubljani (PASEF). V vzorec smo zajeli vseh 500 največjih podjetij, ne glede na dejavnost in lastništvo. Nato smo bazo prečistili in izključili vsa podjetja z manj kot 100 zaposlenimi (cilj tega početja je bil izločiti holdinške družbe, ki z malim številom zaposlenih ustvarjajo visoke prihodke) ter podjetja, za katera ni bilo moč pridobiti kontaktnih podatkov (so prenehala obstajati, so bila pripojena drugemu podjetju, so šla v stečaj, so spremenila ime ipd). Po tem filtriranju je v končnem vzorčnem okviru ostalo 388 podjetij z lestvice 500 največjih podjetij.

Kot del strategije za čim večjo stopnjo odzivnosti smo se pred pošiljanjem vprašalnikov za sodelovanje najprej dogovorili po telefonu. Namen tega početja je bil pridobiti podatke o najprimernejši osebi za anketiranje. V večini primerov smo se s takimi osebami neposredno pogovorili in jim razložili namen raziskave. V pogovorih se je izkazalo, da najprimernejše osebe v ciljnih podjetjih navadno opravljajo eno od naslednjih treh funkcij: vodja kontrolinga, vodja računovodstva ali vodja finančno-računovodskega sektorja.

Podatki so bili zbrani leta 2005. Skupaj je bilo prejetih 193 vprašalnikov, kar predstavlja 49,7 % stopnjo odzivnosti glede na vzorčni okvir. Struktura podjetij v vzorcu in vzorčnem okviru glede na dejavnost je prikazana v Tabeli 1 (uporabljena je standardna klasifikacija dejavnosti – SKD).

Kot je razvidno iz Tabele 1, se frekvence po dejavnostih močno razlikujejo. Več kot polovica oziroma 56% vseh podjetij v vzorcu se ukvarja s predelovalno dejavnostjo. To seveda ne pomeni, da je vzorec pristranski, saj je tudi v celotnem vzorčnem okviru delež predelovalnih dejavnosti podoben kot v vzorčnem okviru, in sicer znaša 53,1% (glej zadnji stolpec v Tabeli 1). Na drugi strani vzorec vključuje zgolj eno podjetje (oziroma 0,5%) iz dejavnosti kmetijstvo in gozdarstvo, vendar je tudi v vzorčnem okviru delež kmetijskih podjetij podoben, saj znaša 1%.

3.3 Merski instrument

Za merjenje participacije računovodij v procesu strateškega managementa je bil povzet instrument, ki sta ga Wooldridge in Floyd (1990) razvila za merjenje participacije srednjega managementa v procesu strateškega managementa. Ta instrument je bil izbran zato, ker so pri merjenju participacije želeni razumljivi in procesno nevtralni

instrumenti. Kavčič et al. (2004) namreč navajajo, da se novejša dognanja v računovodski praksi slovenskih podjetij uveljavljajo počasi, zato smo se v vprašalniku želeli izogniti akademsko-znanstveni terminologiji, kot je poslanstvo, planske predpostavke, razvijanje strategije, izbira strategije, uresničevanje strategije ipd.

Instrument je osredotočen na 5 vidikov oziroma aktivnosti v okviru procesa strateškega managementa in predstavlja enodimenzionalni konstrukt participacije. Anketiranim je bilo zastavljeno naslednje vprašanje:

»Prosimo označite, v kakšni meri poslovodni računovodje (kontrolerji) v vaši organizaciji sodelujete pri naslednjih aktivnostih v okviru procesa strateškega managementa:

- identificiranje problemov in predlaganje ciljev
- iskanje (oblikovanje) alternativ
- ovrednotenje alternativ
- podrobnejše analiziranje izbranih alternativ
- izpeljava ustreznih aktivnosti za uvedbo strateških sprememb.«

Anketirani so ocenili stopnjo participacije za vsako od teh aktivnosti na merski lestvici od 1 do 7, kjer 1 pomeni »sploh ne sodelujem« in 7 pomeni »popolnoma sodelujem«.

4 Rezultati

Stopnja participacije poslovodnih računovodij v procesu strateškega managementa je prikazana v Tabeli 2, in sicer za vsako od petih preučevanih aktivnosti v okviru tega procesa posebej.

Kot je razvidno iz Tabele 2, poslovodni računovodje v Sloveniji relativno najbolj sodelujejo pri aktivnostih ovrednotenja alternativ in podrobnega analiziranja alternativ, najmanj pa pri izpeljavi ustreznih aktivnosti za uvedbo sprememb. So pa povprečja za vseh 5 sprememb višja od sredine merske lestvice, kar nakazuje na to, da slovenski poslovodni računovodje dokaj aktivno sodelujejo v procesu strateškega managementa.

Za preučitev medpanožnih razlik smo stopnjo participacije izračunali za vsako dejavnost posebej. Ker je za kakršnokoli posplošitev rezultatov zaželeno vsaj neko minimalno število podjetij v vsaki dejavnosti, smo se odločili analizirati samo dejavnosti, v katerih je frekvenca podjetij vsaj 8. Ta pogoj izpolnjuje 6 dejavnosti, medtem ko je v preostalih petih frekvenca nižja od 6 (glej Tabelo 1). S ci-

Tabela 2: Participacija poslovodnih računovodij v procesu strateškega managementa v slovenskih podjetjih

Aktivnost	Aritmetična sredina	Standardni odklon
Identificiranje problemov in predlaganje ciljev	4,78	1,60
Iskanje (oblikovanje) alternativ	4,55	1,64
Ovrednotenje alternativ	5,12	1,58
Podrobnejše analiziranje alternativ	5,13	1,63
Izpeljava ustreznih aktivnosti za uvedbo sprememb	4,38	1,64

Merska lestvica: 1 – sploh ne sodelujem, 7 – popolnoma sodelujem.

ljem čimmanjše izgube podatkov smo se nato odločili še za dve združitvi po naši presoji relativno sorodnih dejavnosti. Prvič, z združitvijo dejavnosti H (gostinstvo) in O (druge javne in oskrbne dejavnosti) smo pridobili še eno skupino, ki šteje 8 podjetij. In drugič, skupini J (finančno posredništvo) smo priključili še skupino K (poslovanje z nepremičninami). To pomeni, da so bila iz panožne analize izključena samo tri precej specifična podjetja iz dejavnosti kmetijstvo (A) in rudarstvo (B).

Stopnje participacije po dejavnostih so prikazane v Tabeli 3. Statistično značilnost razlik po dejavnostih smo ugotavljali s pomočjo analize variance (Chenhall in Langfield-Smith, 1998). Statistično značilen F-test v zadnjem stolpcu Tabele 3 pove, da se povprečna stopnja participacije vsaj v eni (skupini) dejavnosti razlikuje od ostalih (skupin) dejavnosti. Testiramo torej hipotezo enakih aritmetičnih sredin, vendar pa nam test ne da odgovora na vprašanje, katera aritmetična sredina je različna od ostalih (Hair et al., 1998).

Rezultati v Tabeli 3 kažejo, da je stopnja participacije statistično značilno različna po dejavnostih za štiri izmed petih preučevanih aktivnosti. To je v veliki meri skladno s hipotezo, da se stopnja participacije po panogah razlikuje. Edina aktivnost, pri kateri se stopnja participacije po panogah oziroma skupinah panog značilno ne razlikuje, je aktivnost identificiranja problemov in predlaganja ciljev.

S ciljem podrobneje analizirati razlike po dejavnostih, smo za vsako aktivnost dejavnosti rangirali glede na izmerjeno stopnjo participacije (rangi so v Tabeli 3 zapisani v oklepaju). Kljub temu, da so rangi za vsako aktivnost drugačni, je možno opaziti določen vzorec obnašanja podatkov. V splošnem bi lahko rekli, da je stopnja participacije računovodij v procesu strateškega managementa relativno visoka v treh dejavnostih, ki pri vseh aktivnostih dosegajo relativno visoke range. To so predelovalne dejavnosti (enkrat rang 1, trikrat rang 2, enkrat rang 3), trgovina (dvakrat rang 1, enkrat rang 2, dvakrat rang 4) ter gostinstvo in ostale storitve (dvakrat rang 1 ter po enkrat rang 2, 3 in 5). Na drugi strani je stopnja participacije računovodij v procesu strateškega managementa najnižja v

dejavnosti oskrbe z energijo, plinom in vodo (štirikrat rang 7, enkrat rang 6). Ta dejavnost izrazito odstopa od ostalih, saj prav pri nobeni aktivnosti izmerjena stopnja participacije ne presega sredine merske lestvice. Relativno glede na ostale dejavnosti je participacija nizka tudi v gradbeništvu (enkrat rang 7 ter po dvakrat rang 6 in 5), vendar razen pri eni aktivnosti (izpeljava sprememb) vseeno presega sredino merske lestvice. Nekje blizu povprečja so stopnje participacije v dejavnostih finančnega in nepremičninskega posredništva ter dejavnosti prometa, skladiščenja in zvez.

5 Sklep in diskusija

V zadnjih dvajsetih letih se je vloga poslovnih računovodij v organizacijskem ustroju močno spremenila. Medtem ko je bila tradicionalno njihova vloga omejena na posredovanje koristnih informacij zainteresiranim uporabnikom (managerjem), se naloga sodobnih poslovnih računovodij ne ustavi zgolj pri posredovanju informacij. Od sodobnih poslovnih računovodij se pričakuje dejavno sodelovanje v celotnem procesu odločanja (Oliver, 1991; Palmer, 1992; Bhimani in Keshtvarz, 1999; Nyamori et al., 2001) in aktivna vključenost v strateški managerski team (Baines in Langfield-Smith, 2003; Naranjo-Gil in Hartmann, 2007; Rowe et al., 2008).

Glavna prispevka študije sta dva. Prvi prispevek je preučitev stopnje participacije poslovnih računovodij v procesu strateškega managementa v 193 večjih slovenskih podjetjih. Drugi prispevek je medpanožna analiza razlik v stopnji participacije.

Pri preučevanju participacije poslovnih računovodij v procesu strateškega managementa smo se osredotočili na pet aktivnosti v okviru procesa strateškega managementa, in sicer: identificiranje problemov in predlaganje strateških ciljev, iskanje (oblikovanje) alternativ, ovrednotenje alternativ, podrobnejše analiziranje izbranih alternativ in izpeljava ustreznih aktivnosti za uvedbo strateških sprememb. Rezultati raziskave dokaj pričako-

Tabela 3: Participacija poslovnih računovodij v procesu strateškega managementa v slovenskih podjetjih po dejavnostih (analiza variance)

Aktivnost	Dejavnost (glej Tabelo 1 za legendo)							F-test st. znač. [§]
	F	D	E	G	I	J,K	H,O	
	n = 9	n = 108	n = 10	n = 30	N = 13	n = 12	n = 8	
Identificiranje problemov	4,33 (5)	4,91 (3)	4,00 (7)	4,87 (4)	4,23 (6)	5,00 (2)	5,38 (1)	0,24
Iskanje alternativ	4,11 (5)	4,69 (2)	3,40 (7)	4,57 (4)	4,00 (6)	4,67 (3)	5,50 (1)	*0,09
Ovrednotenje alternativ	4,56 (6)	5,37 (1)	3,80 (7)	5,30 (2)	4,62 (5)	4,92 (4)	5,13 (3)	**0,04
Podrobna analiza alternativ	4,44 (6)	5,25 (2)	4,00 (7)	5,57 (1)	4,77 (5)	5,17 (4)	5,25 (2)	*0,08
Izpeljava aktivnosti	3,11 (7)	4,59 (2)	3,50 (6)	4,66 (1)	4,38 (3)	4,17 (4)	4,00 (5)	**0,04

§ * F-test je statistično značilen pri stopnji tveganja 10 %; ** pri stopnji tveganja 5 %.

vano kažejo, da poslovodni računovodje relativno najbolj sodelujejo pri aktivnostih ovrednotenja alternativ in podrobnega analiziranja alternativ. Računovodstvo je v osnovi informacijska funkcija, torej podpira management z uporabnimi informacijami in analizami za sprejemanje odločitev. Vendar pa je tudi pri vseh ostalih preučevanih aktivnostih stopnja participacije relativno visoka, saj povsod presega sredino merske lestvice. V skladu s prvim raziskovalnim vprašanjem zato lahko ugotovimo, da sodobnih slovenskih poslovodnih računovodij ne moremo označiti več zgolj kot pripravljalce informacij. Bolj primerna se zdi oznaka, da podobno kot njihovi kolegi v razvitih državah (Fern in Tipgos, 1988; Bhimani in Keshtvarz, 1999) predstavljajo tvoren in aktiven člen v procesu strateškega managementa podjetja.

Za potrebe medpanožne primerjave smo preučevana podjetja razdelili v sedem (skupin) dejavnosti po standardni klasifikaciji dejavnosti. To so (1) gradbeništvo, (2) predelovalne dejavnosti, (3) oskrba z energijo, plinom in vodo, (4) trgovina, (5) promet, skladiščenje in zveze, (6) finančno in nepremičninsko posredovanje ter (7) gostinstvo ter druge javne in oskrbne dejavnosti. Medpanožna primerjava kaže, da se stopnja participacije poslovodnih računovodij v procesu strateškega managementa značilno razlikuje po panogah za štiri od petih preučevanih aktivnosti, kar v veliki meri potrjuje hipotezo, da je participacija po panogah različna.

Gledano na splošno je participacija relativno visoka v predelovalnih dejavnostih, trgovini ter gostinstvu in drugih oskrbnih dejavnostih. Po drugi strani po relativno nizki stopnji participacije izrazito odstopa dejavnost oskrbe z energijo, plinom in vodo. Ne samo, da je participacija relativno nizka glede na ostale dejavnosti, ampak je relativno nizka tudi glede na mersko lestvico, saj prav za nobeno aktivnost ne presega sredine merske lestvice. Relativno nizka je stopnja participacije tudi v gradbeništvu. Anderson in Lanen (1999) ter Mia in Clarke (1999) so ugotovili, da je razvitost poslovodno računovodskega sistema v podjetjih pozitivno povezana z intenzivnostjo konkurence v panogi. Večja konkurenčnost deluje kot pritisk za optimizacijo vseh aktivnosti in procesov v podjetju, vključno z računovodstvom. Taka razlaga se zdi primerna tudi za našo študijo. Verjetno najbolj izpostavljena konkurenci je predelovalna dejavnost, saj večino proizvodnje izvozi. Podatki z lestvice Finance Top 101 za leto 2006 denimo kažejo, da je 10 največjih slovenskih predelovalnih podjetij v povprečju izvozilo kar 83,4 % svoje celotne prodaje (Finance Top 101 – največje slovenske poslovne skupine leta 2006). Tudi v trgovini so v Sloveniji prisotna mnoga tuja podjetja, hkrati pa se slovenski trgovci širijo v tujino in tam soočajo s tujo konkurenco. Po drugi strani je v dejavnosti oskrbe z energijo, plinom in vodo konkurence relativno malo, če sploh. Na nek način bi še vedno lahko govorili o »javnem sektorju«. Podobno velja za gradbeništvo. Slovenska podjetja dobijo skoraj vse večje gradbene posle v Sloveniji, medtem ko so na tujem precej manj prodorni, saj 6 največjih slovenskih gradbenih podjetij v tujini ustvari v povprečju samo 9 % prihodkov (Fi-

nance Top 101 – največje slovenske poslovne skupine leta 2006).

Gledano v celoti bi lahko zaključili, da slovensko poslovodno računovodstvo sledi svetovnim trendom. Slovenski poslovodni računovodje niso več zgolj pripravljalci informacij, ampak aktivni udeleženci v procesu strateškega odločanja (Naranjo-Gil in Hartmann, 2007; Chenhall, 2008). In drugič, stopnja njihovega udejstvovanja v strateških zadevah se po panogah razlikuje. Podobno kot v tujini (Anderson in Lanen, 1999; Mia in Clarke, 1999) je relativno nizka predvsem v tistih dejavnostih, kjer je intenzivnost konkurence relativno majhna.

Pri interpretaciji rezultatov študije se je treba zavedati tudi njenih omejitev. Poleg splošno znanih pomanjkljivosti anketnega raziskovanja z vprašalniki je problem v operacionalizaciji preučevanih spremenljivk. Ker Kavčič et al. (2004) navajajo, da se novejša dognanja v slovensko računovodsko prakso uveljavljajo počasi, smo se temu poskušali prilagoditi z uporabo razumljivega in procesno nevtralnega instrumenta (Wooldridge in Floyd, 1990). Prav tako je potrebno upoštevati, da je z izjemo dveh dejavnosti število anketiranih podjetij relativno majhno, kar je pri medpanožni analizi lahko problematično z vidika posploševanja rezultatov. Ne glede na te pomanjkljivosti pa daje študija zanimiv vpogled v sodobno poslovodno računovodsko prakso v Sloveniji.

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Boštjan Aver je predsednik uprave zavarovalnice Vzajemna d.v.z. Magistriral in doktoriral je na Ekonomski fakulteti Univerze v Ljubljani. Kot predavatelj sodeluje na Fakulteti za Management Koper, Univerza na Primorskem, in na Evropski pravni fakulteti v Novi Gorici, aktivno pa sodeluje tudi s Slovenskim združenjem za projektni management. Je avtor številnih znanstvenih in strokovnih člankov s področja financ, računovodstva, kontrolinga in projektnega managementa.

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Anastasia A. Katou

Innovation and Human Resource Management: the Greek Experience

The purpose of this paper is to investigate the pathways leading from innovation to organisational performance by using structural equation modelling. Specifically, we used this analytical tool to test a research framework that is constituted by a set of causal relationships between organisational contingencies, innovation, HRM policies (resourcing, training, rewards, relations), HRM outcomes (skills, attitudes, behaviour), and organisational performance. Employing data from organisations operating in the Greek manufacturing sector, results indicate that the impact of innovation on organisational performance is positive and mediated through HRM policies and HRM outcomes, and moderated by organisational context (management style, organisational culture).

Key words: Innovation strategy; HRM policies; Causality; Structural equation modelling; Greek manufacturing

**Damjana Jerman,
Goran Vuković, Bruno Završnik**

How Public Relations Impact on a Company's Effectiveness

The role of public relations is dealing with the identification of organization's strategic public and developing communications programs for building solid, open and trusting relations with them. Many companies have taken a limited view of the impact that public relations can have on company's overall effectiveness. This paper consists of two parts: the theoretical framework for the role of public relations in the overall effectiveness of the company and an empirical analysis based on the primary data collected. We classified and analyzed different public relations factors (i.e. factors related to managing and implementing

public relations) that influences the effectiveness of the company. We explored the correlation between public relations and a company's effectiveness and argued that public relations factors play a critical role in that effectiveness. We used linear regression and we found a significant linear relationship between the independent variable (public relations) and the dependent variable (company effectiveness).

Key words: Public relations, Public relations function, Company's effectiveness, Public relations strategy, Public relations agency

Andrejka Mevc, Milan Pagon

Corruption in Public Administration Units and Organizational Measures to Prevent and Fight Corruption

This paper presents the results of a study that investigated the attitudes of civil servants in public administration units in Slovenia regarding corruption at work. The results show that civil servants employed in public administration units take corruption seriously. The employees' perceptions of corruption and their willingness to report the offender are closely connected to their opinion on how others - their colleagues - perceive it (i.e., how serious they find corruption and whether they are willing to report the offender). There are important gender differences regarding the perceptions of corruption, as well as differences in the function they have and their membership in organizational units. The authors conclude that it is necessary to develop and strengthen the feelings of the employees' security and increase the link between perceiving corruption and one's own judgment of the seriousness of corruptive behaviour, as well as to decrease the tolerance regarding corruption.

Key words: administrative corruption, corruptive behaviour, code of silence, anticorruptive measures, offender, management, civil servant, public administration unit.

**Ozlem Aydin,
Fatma Pakdil, MBA**

Fuzzy Servqual Analysis in Airline Services

This study is aimed at measuring and summarizing the perceived and expected service quality of passengers of an international airline and to provide the passengers' opinions to the decision makers employing fuzzy logic. The appropriate fuzzification procedure was determined to be the trapezoidal membership function. Using SERVQUAL methodology, the optimal fuzzy interval of the gap scores was determined for each item. The interpretations of these fuzzy intervals were categorized into three areas - optimistic, neutral and pessimistic passenger views - to assist the decision makers in identifying which items of services are satisfactory and which are in need of improvement.

Key words: Airline service quality, fuzzy numbers, fuzzy SERVQUAL scores.

Danijel Bratina, Armand Faganel

Forecasting the Primary Demand for a Beer Brand Using Time Series Analysis

Market research often uses data (i.e. marketing mix variables) that is equally spaced over time. Time series theory is perfectly suited to study this phenomena's dependency on time. It is used for forecasting and causality analysis, but their greatest strength is in studying the impact of a discrete event in time, which makes it a powerful tool for marketers. This article introduces the basic concepts behind time series theory and illustrates its current application in marketing research. We use time series analysis to forecast the demand for beer on the Slovenian market using scanner data from two major retail stores. Before our analysis, only broader time spans have been used to perform time series analysis (weekly, monthly, quarterly or yearly data). In our

study we analyse daily data, which is supposed to carry a lot of 'noise'. We show that - even with noise carrying data - a better model can be computed using time series forecasting, explaining much more variance compared to regular regression. Our analysis also confirms the effect of short term sales promotions on beer demand, which is in conformity with other studies in this field.

Key words: market research, time series forecasting, beer demand
JEL classification: C22, M31

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Survey of the State of e-Learning in Slovenia

In comparison to the other European countries and the general status of the development of information-communication technology in education and training, Slovenia has been traditionally lagging behind. In the same sense, the awareness of the importance of e-learning has not been sufficiently recognized. With this in view we can summarize that the concrete activities on the implementation level on the national level

started with the present period. The article thus focuses on the presentation of the past research activities and initiatives dealing with the e-learning market structure in Slovenia and assesment of the current e-learning situation in Slovenian companies and higher educational institutions. The framework of the National E-learning Strategy 2006-2010 is presented, where special attention is given to that part of the strategy aimed at establishing the most effective and ICT based national educational systems with the objective of increasing economic growth and the competitiveness of Slovenian society, as well as the quality of life of Slovenian citizens.

Key words: information communication technology, e-learning, National E-learning Strategy 2006-2010

Boštjan Aver, Simon Čadež

Management Accountant's Participation in Strategic Management Processes: a Cross-industry Comparison

The role of management accountants in strategic management processes has traditionally been limited to information provision for decision makers. In

the last two decades however their role in a company has changed dramatically. Contrary to their conventional counterparts, modern accountants are not just information providers, rather they are an integral part of decision-making processes. The study herein explores the state of contemporary Slovenian management accounting practice concerning accountant's participation in strategic management processes. The survey results based on a sample of 193 large Slovenian companies reveal that Slovenian accountants in general are relatively amply involved in the process of strategic management, however the level of participation varies intensely across industries. The level of participation is relatively high in manufacturing industries, trade and hospitality services whereas it is relatively low in public services and utilities and construction industries.

Key words: Accountant's participation, Strategic management, Strategic management accounting, Slovenia

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