

## Development of a Decision-Support Model for Outsourcing of IT-Projects in the Public Sector

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### Abstract

*Public sector management in Slovenia has been following the trends in information technology (IT) outsourcing since the mid-nineties of the last century. Despite initial success, outsourcing issue has become increasingly problematic in recent years for various reasons. The paper focuses on in-depth analysis of the critical success factors, benefits and risks within the concept of IT outsourcing, while employing the international studies and primarily the results of own research examining the current state of IT outsourcing in Slovenian municipalities. Research analyses the methodological, substantive, procedural and other relevant aspects of IT outsourcing, provides a set of applicable decision making criteria and eventually presents the conceptual design of multi criteria decision-support model for quality selection and implementation of IT outsourcing projects in the public sector.*

**Keywords:** New Public Management, public sector, IT outsourcing implications, outsourcing criteria, decision-support model.

### 1. Introduction

Influenced by the concept of New Public Management (NPM) and confronted with rapid technological developments in the mid-nineties of the last century, Slovenian public sector organizations have adopted the utilization of IT outsourcing as one of the viable solutions to deal with the intractable and costly IT-sourcing issues. IT outsourcing was expected to generate savings of public sector organizations in the process of developing IT infrastructure and information systems (IS), providing modern IT service for citizens and public officials and facilitating better quality information resources management in the public sector (Kakabadse & Kakabadse, 2001; Kim et al., 2007; Lacity et al., 2010). Regarding the implications of IT outsourcing, estimations are generally ambiguous. Some studies report considerable benefits of IT outsourcing for the organizations that manage to retain control over the outsourcing projects (Linder, 2004; Corbett, 2004; Power et al., 2006), while many organizations find outsourcing relationships frustrating, resulting in numerous setbacks and increasing costs (Chapman & Andrade, 1997; Kern et al., 2002; Taylor, 2006; Cordella & Willcocks, 2010).

After initial success with outsourcing of IT projects in Slovenia, the first problems began to emerge. Outsourcing started consuming the increasing number of IT-related projects leading to a completely opposite effect than expected and desired. Gradually, outsourcing of IT-projects has become a principle in most parts of public sector and a strategic tool of public management. Being dependent on external providers, situation has escalated to the point that some government departments lost control over preparation, development and realization of planned IT-projects, which consequently resulted in weak control over increasing costs and reduced accountability for services (Stanimirovic, 2010). Despite high expectations (Ghodeswar & Vaidyanathan, 2008), subsequent experience has shown that IT outsourcing cannot provide a workable solution for every IT-related project in the public sector, alleviating all the problems initiated by the public finance restrictions, poor long-term strategy and non-reflectively set objectives (Cordella & Willcocks, 2010). Sourcing issue is currently a very important topic and represents one of the fundamental starting points in setting the trajectory of public sector development in the future.

Despite the large quantity of strategic documents (UMAR, 2005; MJPA, 2012) and guidelines for future development of public sector, formal methodologies containing objective criteria and indicators used as decision-support in the process of IT outsourcing are very scarce, allowing arbitrary decisions and intuitive, often political choices. The main hypothesis in the paper argues that future evaluation, planning and implementation of IT outsourcing projects should be based on formalised multi criteria decision-support models provided by information tools, which could significantly facilitate and improve decision making process while minimizing risk and reducing project costs. Thus, the main goal of the paper is to make an overview of the methodologies for evaluation of outsourcing projects and assessment of the decision-support tools in this area, and provide the conceptual design of multi criteria decision-support model based on the survey of IT outsourcing in the Slovenian public sector. Given the theoretical foundations of foreign and domestic authors and the results of our own research, the paper is focusing primarily on the following research questions:

- [1] Overview of the outsourcing concept and summary of multi criteria decision-support models used for evaluation, selection and management of outsourcing projects.
- [2] Analysis of the survey results concerning the outsourcing of IT-projects in Slovenian municipalities, identification of IT outsourcing implications and extraction of the basic criteria which are to be applied in the development of multi criteria decision-support model.
- [3] Development of relatively simple and practically applicable multi criteria decision- support model for selection and implementation of IT outsourcing projects in Slovenian public sector.

Following the introduction, the second section of the paper presents the concept of IT outsourcing and an overview over the relevant literature while outlining contextual considerations and implications of sourcing alternatives and various methodologies for their evaluation. The third section reveals the characteristics of conducted survey, its results and their synthesis. The fourth section presents the applicability of the Analytic Hierarchy Process (AHP) and its inclusion into the development of a multi criteria decision-support model for outsourcing of IT-projects in the public sector. The fifth section summarizes issues addressed, provides discussion on IT outsourcing and offers guidelines for successful implementation of IT outsourcing strategy in the public sector. Whereas the last section contains the evaluation of decision-support model, presents its practical applicability illustrating its positive features and limitations and subsequently submits the final arguments and observations regarding the described approach.

## ***2. Outsourcing - implications and literature review***

Ellram and Maltz (1997) argue that outsourcing is a contractual transfer of organizational activities as well as responsibilities to other (external) business entity. They emphasize that the volume of outsourced activities depends on their content and needs of the parent organization. Kubr (2002) defines outsourcing merely as a contractual elimination and transfer of the organizational activity to the external business entities, while such operating strategy allows the efficient allocation of resources. Literature presents a wide variety of different definitions, ranging from the most consistent and accurate, up to superficial and partial definition of the phenomenon. However, the most practical is its most widely accepted definition, whereas outsourcing is characterized as a contractual transfer of certain activities and business processes from the parent organization to the external supplier (Greaver, 1999).

Outsourcing within the concept of NPM since 1980's can be seen as a business strategy in which the organization is striving to improve business performance and primarily cut back costs (Lapsley, 2009) as well as focus on its core functions and activities (Hood & Peters, 2004). It is one of the main instruments used by governments in their efforts to modernise public sector and make it more market-oriented as well as cost efficient (Martin, 2010). Nevertheless non-critical and over abundant implementation of outsourcing projects has led to some unforeseen problems in public sector. Slovenia has encountered problems with outsourcing especially in the last five years and on-going financial and economic crisis just revealed its magnitude (Vintar et al., 2010). Seeking short-term solutions and lack of experience in this field as well as neglecting all other organizational aspects except costs (even cost-effectiveness of some outsourcing projects is very doubtful in the long run) has led some public sector organizations to difficult situation (Stanimirovic, 2010). In fact, their future operation is significantly compromised without external suppliers; while on the other hand, outsourcing is undermining their organizational foundations such as control over costs, human resources and future development.

## **2.1 Literature review and recent research**

The first scientific research of outsourcing can be found in the late 80's and early 90's of the last century (Ford & Farmer, 1986; Due, 1992; Willcocks & Lacity, 1995, etc.). Comprehensive studies of the impact and importance of outsourcing are still rare. Corbett (2004) and Jensen (2007) claim that the phenomenon of outsourcing gained so much importance over the last twenty years due to global social change and transformation as well as the booming public sectors worldwide.

Previous research of outsourcing (Quinn & Hilmer, 1994; Johnson, 1997; Lonsdale & Cox, 1997; Jacobides, 2005) is largely exploring the financial implications of outsourcing and mainly presents parent organizations dissatisfaction with the ongoing projects which are often terminated before expected (Kavcic & Tavcar, 2008). Despite the growing interest in the phenomenon of outsourcing, which has recently raised increasing attention among researchers in the most propulsive economies over the past few years, namely the authors in India (Pandey & Bansal, 2003) and China (Choy et al., 2005), it is difficult to trace a comprehensive strategy for preventing or resolving problems of outsourcing projects. Studies (Schniederjans et al., 2005; Taylor, 2006) often reveal the hidden costs as the most problematic segment of outsourcing, in which problems usually occur when organizations are already heavily involved in the outsourcing projects and the termination of contract in that phase would inflict large financial losses for both sides. Surprisingly, research is rarely dealing with the other negative consequences that may pose a potential threat.

On the other hand, outsourcing literature (Nellore & Soderquist, 2000) deals with separate aspects of the parent organization and the external supplier, and hardly addresses the outsourcing in an integrated manner focusing on the whole project, rather than individual business entities (Kavcic & Tavcar, 2008). Accordingly, the substantive and procedural decision making criteria, presented by the most literature, are extremely vague and arbitrary and consequently prevent organizations to adopt comprehensive and objective evaluation of such projects. Previous research (Kern et al., 2002; Linder, 2004; Power et al., 2006) is mainly focused on a small number of criteria, which consider only short-term and partial aspects of business cooperation and do not address long-term, strategic implications of outsourcing projects. However, number of researches dealing with multi criteria decision making models concerning outsourcing is still modest, particularly in the public sector. Abath and Almeida (2009) presented some multi criteria decision-support models for evaluation of outsourcing projects, although mainly developed for private sector, they are presented below.

To solve the problem of supplier selection, Almeida (2007) presents a multicriteria model for supplier evaluation based on ELimination Et Choix Traduisant la REalité (ELECTRE - ELimination and Choice Expressing Reality) method (Roy, 1968). For each alternative of an outsourcing contract there is an evaluation of cost and quality of service. As Almeida (2007) and Wadhwa and Ravindran (2007) considered price, quality and lead-time as conflicting criteria which have to be minimized simultaneously.

Araz et al. (2007) developed an external vendor evaluation and management system for a textile company using Fuzzy Goal Programming (FGP). The external vendors are evaluated by Preference Ranking Organization METHod for Enrichment Evaluations (PROMETHEE; Brans, 1982) and then the FGP model selects the most appropriate ones and allocates the order quantities. Choy et al. (2005) describe a knowledge-based supplier selection and evaluation system for the case of outsourcing operations. The cumulative performance of suppliers is constantly updated automatically, retaining, categorizing, retrieving and managing the information about them. Wang and Yang (2007) proposed that outsourcing decisions should contain six factors: economics, resources, strategy, risk, management and quality. In the decision making process for information systems outsourcing they used AHP to analyse the structure of the outsourcing problem and determine weights of the criteria, and PROMETHEE was used for final ranking.

Humphreys et al. (2002) developed a decision model using a Knowledge-Based System (KBS) to support the "buy or do" problem. The model consists of five stages: identifying and weighting performance categories, analysing technical capabilities, comparing internal and external capabilities, analysing supplier organizational capabilities and acquisition cost analysis. Kim (2003) uses an optimal control model to deal with a manufacturing company which outsources its assembly operations to two contract manufacturers. Lee et al. (2002) explored an outsourcing problem where planning and scheduling are interrelated and should be solved simultaneously, while outsourcing should ensure that ordering deadlines are respected.

Florin et al. (2005) present the relations between IT and outsourcing decisions on short- and long-term abnormal returns, and effects of the organizational restructuring resulting from such decisions. Walden and Hoffman (2007) differently from other authors studied the IT outsourcing problem from the supplier's perspective. They argue that the external provider, since managing the IT function for several firms, is privileged to information not available to the parent firm, allowing the supplier to provide incentives for its employees.

Listed methodologies represent a firm foundation for better understanding of the outsourcing problem and they can provide a starting point for the construction of our own decision-support model. On the other hand, their main drawback is evaluation of outsourcing from rather narrow and static aspects while ignoring its broad organizational and social implications and other issues specific only to the public sector studied in this paper. Decision-support model presented in this paper exceeds the limitations addressed above, since it is considering the implications of IT outsourcing on different organizational aspects and encompassing substantive analysis of decision making criteria in the broader perspective. As seen in previous paragraphs the existing studies and methodologies are predominantly unilateral focusing primarily on short-term cost indicators which highlight mainly the financial background of the whole problem.

### ***3. Survey of IT outsourcing in the public sector – municipal level***

The survey was conducted using structured questionnaires addressed to municipal Chief information officers (CIO) during the first six months of 2010 on a sample of 85 municipalities (212 municipalities in Slovenia, which means that the sample covered 40.09% of all municipalities). 64 municipalities responded to the survey (75.3% response rate of the sample, which means that the realized sample amounted 30.18% of the total number of municipalities in Slovenia).

The purpose of the research is comprehensive analysis of the situation in the field of outsourcing at the municipal level in Slovenia, with special emphasis on the analysis of different organizational factors within public sector domain. The methodology consisted of qualitative and quantitative indicators, adjusted for objective and wide-ranging ex ante evaluation of the outsourcing projects in public sector organizations. Questions within the both sets of indicators were interrelated with four main categories, namely: financial, organizational, developmental and human resources, and adapted for public sector organizations focusing especially on public interests and socio economic role of the public sector. The findings obtained will enable the development of concrete guidelines and recommendations for an integrated outsourcing strategy comprising substantive and procedural features.

#### **3.1 Survey results and their synthesis**

The survey results showed that as many as 51 (80%) surveyed municipalities believe that outsourcing cannot negatively affect the organization and its human resources. The study has also revealed that 64% of the surveyed municipalities are not familiar with the long-term impacts of outsourcing which are directly linked to loss of competencies, quality human resources and staffing problems, and are consequently unaware of potential risks which they are exposed to, when signing an outsourcing contract. 50 (78%) municipalities argue that outsourcing facilitates greater cost effectiveness, while 14 (22%) municipalities state the opposite. Furthermore, the results showed that 37 (57.82%) municipalities believe that the financial sector is most exposed to potential negative impacts of outsourcing in the long run, 10 (15.63%) municipalities believe that human resources and development are compromised because of outsourcing, while 7 (10.92%) municipalities believe that outsourcing poses the biggest threat to the organizational aspect of municipalities. The latter results directly reveal the need for better outsourcing strategies, more responsible management of outsourcing relationships and in particular, a better understanding of this complex phenomenon.

Overall ratings of municipalities considering their satisfaction with outsourcing results and effects of external provision of IT-projects reached very high. On the scale from 1 to 5 (1 –dissatisfied and 5 – very satisfied) mean value has reached 4.05 (std. error of mean 0.96 and std. deviation 0.76). Referring to the foregoing assessments, municipalities do not share very affirmative opinion on internal provision of IT-projects in general. In evaluating the savings that could be generated from in – house provision of IT-projects, municipalities' ratings were relatively low, namely on the scale from 1 to 5 (1 – insignificant and 5 – very high) mean value has reached 2.80 (std. error of mean 0.11 and std. deviation 0.89). Estimated risks of the IT outsourcing projects were assessed with an average rating of 3.78 on the scale of 1 to 5 where 1 means high and 5 is negligible (2 fairly large, 3 medium, 4 small).

Regarding the substantive and procedural aspects of outsourcing projects implementation, results revealed that the municipalities do not use formal decision-support models comprised of substantive and procedural factors relevant for the quality management of IT outsourcing relationships. Thereafter, their management activities concerning outsourcing relationships are focused primarily on financial background of outsourcing relationships and compliance with normative regulation regarding the implementation of public tender and selection of external supplier. The latter was confirmed, while as many as 46.90% of municipalities surveyed, identified financial area as the main point of management interest. Considering the procedural issue which focuses on the pressures in the process of implementation of public tender and selection of external suppliers, 5 (8%) municipalities responded in the affirmative, 41 negative (64%), and 18 (28%) surveyed municipalities replied they are not familiar with these pressures. Particularly problematic seems the fact that 46 (72%) municipalities do not have a formal system of indicators to measure performance and efficiency of their organizations, as opposed to 18 (28%) municipalities which have formed such indicator models. Evaluating the importance of the identified substantive reasons for outsourcing of IT-projects in the public sector on a scale of 1 to 5, where 1 is unimportant and 5 very important (2 fairly important, 3 medium-important, 4 important), survey revealed the values presented in Table 1.

**Table 1: Substantive reasons for outsourcing of IT-projects**

Reasons for outsourcing of IT-projects	Average value	Std. dev.	Number of municipalities	Of the sample %
1. Lack of expertise, knowledge and skills within the organization	4.18	0.76	16	25
2. Focus on core activities and functions within the organization	4.09	1.00	16	25
3. Better quality and cheaper services for users	3.83	1.14	9	14
4. Lower costs because of specialization and expertise of external supplier	3.76	0.79	16	25
5. Reducing risk and improved control over work	3.25	1.06	3	5
6. Flexibility of the organization and better quality management	2.88	0.91	2	3
7. Business process reengineering	2.38	0.96	2	3

The survey also revealed that 60 (94%) municipalities do not have comprehensive long-term strategy in the field of outsourcing. In addition, research showed the vast majority of surveyed municipalities (80%) have no actual evaluation framework, including objective criteria or a system of indicators to measure the eligibility of outsourcing decisions. The latter results indicate that the municipalities' decisions on outsourcing are mainly based on intuition and the inertia of previous years, rather than pre-established objective criteria and measurable indicators. Non-evidence based management, whereby management decisions and budget allocations are made without relying onto objective figures, allows a multitude of speculation. The issue addressed requires a sustainable and comprehensive solution, comprised of evidence-based decision making and strong management commitment for continuous improvement of public sector services.

Municipalities have an average of 5.98 external suppliers, amounting approximately 17.76% of their annual budget, which accounts for a significant share. The largest percentage of the costs is allocated to information systems, information-communication technologies and other areas related to IT summing up to 5.7%, in second place is consulting and expertise with 4.61% share. In addition 41 (64%) municipalities have clear assessments on their core business and activities, which should not be outsourced under any circumstances, as well as clear understanding of supporting activities which could be outsourced under certain conditions, while 23 (36%) municipalities have no clear position on this issue. 28 (43.5%) municipalities believe that outsourcing has increased their efficiency mainly in the field of internal business processes, business users and the financial aspect are sharing the second place, namely 14 (21.75%) municipalities think that outsourcing has a positive impact predominantly on user satisfaction and financial side, and 8 (13%) municipalities reflect that outsourcing has positively affected the aspect of learning and growth. Taking into account the complexity of the outsourcing phenomenon and sensitivity of the issue, as well as limited capacities of conducted survey (Stanimirovic, 2010) findings obtained indicate the existence of various important implications of outsourcing strategy. Positive and negative implications derived from the research results are divided into four categories and presented below (Stanimirovic, 2010), starting with the positive outsourcing implications (Table 2).

**Table 2: Positive implications of IT outsourcing in the public sector**

<b>Organizational and corporate implications</b>
focus on core business and activities; increased business flexibility in changing social conditions; restructuring the organization; creating higher added value products/services, increased customer satisfaction and generate greater returns to capital investments.
<b>Increased efficiency implications</b>
improving operational efficiency that may result in better quality, greater productivity, shorter investments cycle, increasing returns; access to knowledge, experience and modern technology; improved governance and control processes; access to innovative ideas and solutions.
<b>Financial implications</b>
reduced future investment in assets that can be provided by external suppliers; focus on in-house investments; increased market share and exploitation of business opportunities offered by a network of partner organizations; faster growth of the organization - possibility of using the partner's capabilities, processes and systems.
<b>Cost implications</b>
reduced costs due to the external supplier's performance and price of products or services; transformation of fixed costs into variable costs; decreased costs due to the large reductions in the value of fixed assets.

Implementation of public sector reforms using outsourcing strategy encountered numerous problems, whose significance has been revealed only after a certain period of time. Survey results exposed lack of long-term planning and evidence-based decision making as well as inadequate procedural regulations and expertise in the field of outsourcing as the major shortcomings affecting the quality implementation of public sector outsourcing projects. Combination of aforementioned issues resulted in the several damaging consequences and effects of IT outsourcing (Stanimirovic, 2010). Negative implications of outsourcing strategy identified by the survey, ultimately leading to the erosion of the public sector (Stanimirovic, 2010), are highlighted below (Table 3).

**Table 3: Negative implications of IT outsourcing in the public sector**

reduced quality of services; user relations problems (technical support, service information, user satisfaction, etc.); reduced accountability for services.
<b>Human resources implications</b>
loss of core competencies; dissatisfaction and insecurity; unstimulating working environment; "brain drain".
<b>Organizational risk implications</b>
loss of control over the most important organizational functions; loss of control over preparation, development and realization of planned projects; dependence on external supplier; collusive tendering and other tendering problems.
<b>Cost implications</b>
loss of control over increasing costs; hidden costs; unexpected costs.

The section above presents only survey results directly related to the main theme of the paper, while the overall presentation of research results and their detailed statistical analysis is not possible, due to the limited length of the paper.

#### ***4. Development of a decision-support model for outsourcing of IT-projects in the public sector***

Development of a quality multi criteria decision-support model to decide on outsourcing of IT-projects in the public sector inevitably requires balancing several different factors (Florin et al., 2005; Araz et al., 2007), such as: economic, social, political, regulatory and technological. This requires the inclusion of numerous stakeholders with different priorities and objectives in all phases of development and hence decision making process (Udo, 2000; Humphreys et al., 2002). Given the above arguments, the paper focuses on the selection of appropriate criteria and suggests the possible construction of multi criteria decision-support model which could assist decision makers in setting priorities and making enhanced decisions in the field of public sector outsourcing. Presented decision-support model should provide a good basis for an impartial and comprehensive analysis of possible alternatives and finding the best solution, as well as highlight some of the hidden aspects and potential problems that may arise in the phase of selection and implementation of IT related outsourcing projects.

##### **4.1 Analytic Hierarchy Process**

Given all the necessary conditions which must be met for the development of multi criteria decision-support model concerning outsourcing of IT-projects in the public sector, AHP seemed to be the most appropriate basis. AHP is a prominent decision theory and a special case of the Analytic Network Process (ANP). Developed by Thomas L. Saaty, it is one the most comprehensive frameworks for the analysis of economical, societal, governmental and corporate decisions, capturing the complex relations and effects of interplay in human society, especially when risk and uncertainty are involved. AHP allows decision makers taking into account all the tangible and intangible factors and criteria affecting the decision, subsequently facilitating quality decision making and management (Vargas, 2010). Not surprisingly, AHP has already been used by some authors (Udo, 2000; Pandey & Bansal, 2003; Mahalik, 2010) in the process of decision making for IT outsourcing.

##### **4.2 Criteria selection – the substantive aspect**

Selection of the criteria and their weighting is the most critical step in decision making process; while ultimately quality decision making requires comparing different alternatives with respect to a set of selected criteria (Saaty, 2005). Criteria have to be ranked in order of importance, whereas their ranking should reflect the degree of importance of each criterion with respect to the other criteria (Vargas, 2010). Structure of the entire decision making process should be limited only to the relevant criteria which reveal the certain implications on the problem. We must make sure that the whole procedure does not stray in over excessive dissection of the problem, because it can blur the important issues and lead to lower quality decisions. Effective use of the multi criteria decision-support model requires a detailed understanding of the problem and a balanced application of data for objective weighting of selected criteria. Overabundance of the criteria may lead to the devaluation of relations among the criteria (Teknomo, 2006), while lack of relevant criteria may preclude a consideration of all relevant aspects and provide an unbalanced and partial solution to the problem, as it does not include all the relationships between elements and their mutual correlations (Saaty, 1988 and 2008). Determining criteria therefore requires accuracy, consistency and detailed knowledge of the nature of the problem. Criteria on which the outsourcing decisions should be based are rarely studied in the wider context. Some of the researchers who deal with such topics are listed below.

The most prominent experts and researchers of outsourcing and its wider socio-economic implications (Chapman & Andrade, 1997; Greaver, 1999; Willcocks et al., 1999; Kakabadse & Kakabadse, 2003; Corbett, 2004; Taylor, 2006; Jensen, 2007, etc.) emphasize the complexity of this phenomenon, which is reflected in the extremely multifaceted and complicated evaluation of its numerous effects, while the long-term implications of outsourcing are often very well concealed (Walden & Hoffman, 2007; Lacity et al., 2010). Evaluation criteria, which represent the core substantive aspect in the process of decision making, should be based on organisational strategies, goals and objectives with strict regard to organization's strategic, tactical and operational considerations. Considering the various studies and research in Slovenian public sector (Stanimirovic, 2010; Vintar et al., 2010) as well as the complexity of the entire field of outsourcing, we selected the following criteria to be deployed in the practical utilization of constructed AHP-based decision-support model:

- |                          |                 |
|--------------------------|-----------------|
| 1. Costs                 | 5. Risk         |
| 2. Competencies          | 6. Organization |
| 3. Quality               | 7. Development  |
| 4. Customer satisfaction | 8. Innovation   |

AHP with its features represents the most solid basis for construction of our own multi criteria decision-support model. It allows a large number of both qualitative and quantitative criteria, whose structure is because of the hierarchical relationships rather simple (Saaty, 1988), while the use of method itself, despite the relatively large number of selected criteria, is rather uncomplicated. The whole process of decision making is based on the simple technique of comparing the relevance of different criteria considering the successful implementation of designated IT-project (Vargas, 2010). Weighting the criteria is conducted by a method of pairwise comparison which consists of two stages (Saaty, 1988 and 2008): qualitative determination of criteria importance – ranking of the criteria, and quantitative weighting of each criterion in accordance with its qualitative ranking position. Based on the pairwise comparison of criteria incorporated in the decision making process, the most optimal solution for the implementation of IT-project is selected (outsourcing or in-house provision). The same comparison technique is repeated with potential sub-criteria if we find that the additional splitting of criteria could facilitate more objective and argumentative decision making (Vargas, 2010). Thus, the essence of AHP approach lies in breaking down a major decision into several minor decisions (Teknomo, 2006). It should be noted here that criteria selection, their absolute and relative weighting and their division into sub criteria should be made on the basis of decision maker's preferences and must be subordinated and adapted to the organization's core business, its needs and long-term goals. Practical demonstration of the AHP application including actual criteria decomposition and figures exceeds the frame and the ambition of this paper (the practical application of AHP is presented in a comprehensive methodology, being discussed at the end of the section). Paper merely wanted to illustrate the possible inclusion of one of the multi criteria decision making methods, in our case AHP, into the development and construction of multi criteria decision-support model for outsourcing of IT projects in the public sector.

### 4.3 Procedural aspect

Management of IT outsourcing projects in the public sector is very specific as it covers very sensitive ground due to public financing and other eligible public interests (Greaver, 1999; Jensen, 2007), hence the relatively large number of substantive criteria. Listed criteria represent the main substantive aspect of public sector organizations and their service provision, concerning their financial stability, human resources, organizational structure and development, while the procedural aspect denotes the second integral part of comprehensive decision-support model.

Procedural aspect in the process of IT outsourcing includes the consideration of legal framework, with strictly defined contractual relationship, transfer of liabilities, transfer of assets and statutory provisions in this area as well as contractual terms, such as: subject of the contract, obligations, Service Level Agreement (SLA), price, risk assessment, duration and termination, dispute resolution, choice of law and special provisions (Walden & Hoffman, 2007; Chen & Bharadwaj, 2009; Vintar et al., 2010). Well defined and detailed contract must provide a quality regulation of strategic elements within the outsourcing relationship, namely very clear definition of business requirements between parties, comprehensive description of activities, outputs, performance as well as control mechanisms (Stanimirovic, 2010). In addition to compliance with strict procedural regulations required by the legislation and contractual provisions, a significant part of the procedural aspect is an execution of market analysis, specifications of project requirements as well as preparation and execution of the public tender in order to select the best external supplier. The supplier selection phase should be followed by a phase of negotiation on terms of cooperation, transition of resources and finally once the outsourcing contract is already signed, management of IT outsourcing relationship should get underway providing supervision, timely anticipation of potential threats and various mechanisms to overcome those (Greaver, 1999; Jensen 2007; Cong & Chau, 2010). Public management must be therefore constantly alert, while monitoring the impacts of IT outsourcing on public sector organizations and public service provision in general.

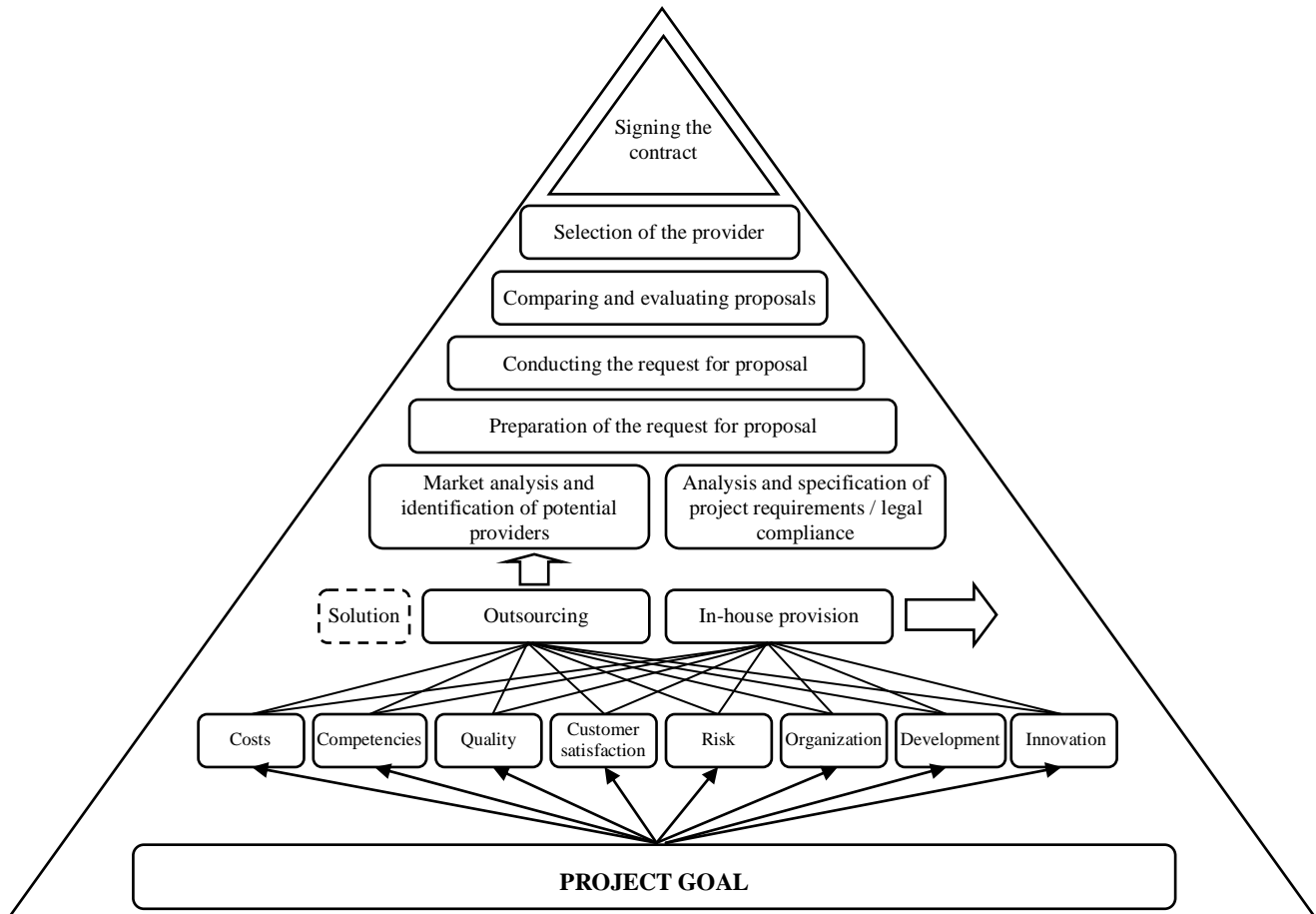
### 4.4 Design of decision-support model

Comprehensive multi criteria decision-support model for outsourcing requires integration of both substantive and procedural aspects in order to facilitate a structured and quality decision making and execution of IT outsourcing projects (Figure 1).



Evaluation criteria represent the core substantive aspect in the process of decision making, while the designated procedural steps constitute the procedural aspect in the process of selection and implementation of outsourcing projects. If the whole process of outsourcing was well planned and coordinated, management should be able to integrate substantive and procedural aspects and bring them in line with the strategic objectives of the organization and the public sector. Only the integration of both aspects in the comprehensive multi criteria decision-support model can represent a useful platform for evidence-based decision making as well as quality selection and implementation of outsourcing projects.

Figure 1 illustrates the inclusion of substantive and procedural aspects in a decision-support model for outsourcing of IT-projects in the public sector, providing a relatively simple and practically applicable instrument for effective utilization of outsourcing strategies in the public sector.



**Figure 1: Decision-support model for outsourcing of IT-projects in the public sector**

The structure of the decision-support model shown above (Figure 1) allows the weighting of the criteria according to their importance, taking into account their impact on strategies, goals and objectives of the organization. However, the selection of the most relevant criteria and their optimum weighting classification usually represent the biggest problem the users of multi criteria decision-support models are faced with. Thus, when criteria are selected and structured according to their importance, the use of the presented model is rather uncomplicated. Decision-support model is only one segment of the comprehensive methodology for evaluation of e-government projects which was developed in cooperation with the Ministry of Public Administration of the Republic of Slovenia. Presented model should, combined with appropriate ICT tools, enable government officials and policy makers to conduct better quality decision making considering the sourcing alternatives for IT-projects. Subsequently, its applicability was tested on a few trial cases from public sector and optimized, while comprehensive analysis of the methodology and the decision-support model itself is still undergoing evaluation in the field of Slovenian e-government.

## 5. Discussion

The critical study presented in the paper involved a revision of IT outsourcing long-term implications for public sector organizations as well as assessment of its substantive and procedural aspects. The main objective of the survey was the analysis of current situation in the field of Slovenian public sector outsourcing and later, based on the survey results, the conceptualization of decision-support model providing a formal institutional platform for effective decision making and empowering municipal authorities to facilitate the reform of administrative systems in accordance with the austerity measures and efforts to reduce government expenditure. Conducted survey revealed various weaknesses of the public sector organizations, especially in the phase of decision making and selection of sourcing options as well as shortcomings in management of outsourcing relationship and its often unanticipated consequences. Accordingly, survey results could forecast the main trajectory of public sector action in the future, while research findings and conclusions could serve as valuable starting points in articulating its development strategy.

Although the research results are rather indicative, they cannot be easily transferred into action, especially while the poor performance of the public sector organizations in the field of IT outsourcing is related to several areas. Such situation requires a detailed analysis and preparation of comprehensive solutions, which often necessitate a radical systemic change in the overall business strategies, redefinition of long-term goals, restructuring the public sector organizations and special attention to human resources development. Below are presented guidelines that could bring improvement to the areas of particular concern and risk, which were disclosed by the survey results:

- definition of core and non-core activities in the functioning of municipalities;
- deployment of evidence-based management including construction and utilization of formal decision-support frameworks combining models, data and IT tools for effective decision making;
- preparation of IT outsourcing strategy, creation of formal approach including strict compliance with substantive and procedural requirements and development of indicator models needed for evidence-based management through the whole cycle of IT outsourcing process;
- assessment of the potential long-term negative implications of IT outsourcing projects;
- utilization of human and other resources as well as hidden potential and synergies within numerous public sector organizations;
- formulate a vision, define strategic objectives and precise tactics as well as provide funds for achieving long-term organizational goals, beyond a period of government mandate.

## 6. Conclusion

Presented multi criteria decision-support model allows the integration of a large number of relevant factors, which subjected to certain substantive and procedural requirements, provide quality and comprehensive, while still “easy to use” approach in decision making, and offers a good basis for objective analysis of possible alternatives, as well as highlights some of the hidden aspects and potential problems that may arise in the phase of selection and implementation of outsourcing projects. Accounting the results of our own research as well as other relevant studies and literature dealing with the outsourcing issues, we selected eight quantitative and qualitative criteria, which are in our view, the most relevant.

Clearly, presented multi criteria decision-support model does not represent universal solution to important problems addressed in this paper in the self-sufficient form. However, on the other hand, developed model may offer due to its simplicity of use and selection of sufficiently objective criteria as well as their appropriate weighting, a lot of help in setting realistic goals and priorities. It can also provide help in allocation of project management resources as well as facilitate decision making and reduce risk in implementation of outsourcing projects. Despite some shortcomings, which can be seen mainly in non-critical selection of the criteria and their weighting, along with the objective limitations of political, regulatory and organizational nature within the public sector, such decision-support models should become a standard in the operating and decision making procedures in the public sector. Application of presented multi criteria decision-support model for outsourcing of IT-projects, despite required upgrading and adaptation to the specific area of use, could become a novelty within the decision making procedures in the public sector. Even more, the objective and critical approach to the selection and evaluation of outsourcing projects should, regarding the context and magnitude of given problems, receive greater support from all stakeholders and become a necessity.

Current practice in this area is based on inertia, intuitive decisions and primarily on the fabrication of studies evaluating such decisions much unilaterally and without regard to long-term effects of outsourcing strategy.

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