IT Governance in Croatian Public Administration- The Human Resources Issues

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Abstract. *The implementation of organizational strategies and strategic objectives in the public sector is becoming increasingly dependent on information technology. Such a dependence suggests the need for recognition of IT governance as an integral part of corporate governance. IT governance in their implementation and evaluation, search for supporting frameworks, such as COBIT, SFIA, Balanced Scorecard and others. Exploring the Croatian public administration sector, regarding the implementation of IT governance, the element of human resources identified as a potential issue. In analysis of data from one organization within the Croatian public administration, we come to conclusions concerning the weaknesses in achieving goals in the domain of ICT staffing, education and skills development.*

Keywords. COBIT, human resources, IT governance, maturity models, public administration

1 Introduction

According to Campbell [5, p. 7], public sector organizations can be seen as a collection of administrative and economic institutions which provide services and goods for the national government. Research show that the public sector is generally lagging behind the private sector when it comes to the implementation of modern technological solutions which would improve its efficiency. Although in most countries the systematic reforms increase the public administration efficiency standards. Research also show that the implementation of new technologies can significantly improve the services, and so has the emergence of online technologies significantly impacted government capacity to provide services [5]. When it comes to information technologies, the key concept is *IT Governance*. This concept is directly linked to corporate management, in a way that IT governance is an integral part of corporate/enterprise government.

For the sake of better level of success, IT governance is conducted and is linked to the rounded frameworks such as COBIT, ITIL, SFIA and so on. COBIT and other frameworks enable identification of certain IT segments (processes, goals), as well as the condition of implementation and activity important to achieve a successful IT governance. One of the integral COBIT segments relates to the management of human resources, skills and training, it is coded as PO7 processes and is significant for the success of IT Governance. After the IT governance concept elaboration and supporting frameworks review, this paper focuses on the Croatian public administration, analyses the existing state, and researches those factors that might contain lags or faults.

The research objective was to gain insight into practice and determine whether there are lags in application of the IT governance, in the Croatian public administration. Additional aim is to investigate presence of lags and possible barriers to the IT governance, in the case of a selected organization within the public administration system.

Research question is whether analysis based on common supporting frameworks for the IT governance indicates on existence of problems, especially in the case of the observed organization? Furthermore, if some problems exist, where are they positioned in the system, in which area? What are the reasons of their appearance?

In this study, we applied the methods of document analysis, content analysis, case study and descriptive statistics.

This paper is organized in the following way: in Section 2, the concept of IT governance is discussed; in Section 3, COBIT is shown; in Section 4, IT governance topic in the public sector is discussed; in Section 5 IT Governance in the Croatian Public Sector is further discussed; Section 6 deals with Research; and Section 7 is the Conclusion.

2 IT Governance

IT governance is a relatively new concept, and as such it represents an integral part of enterprise governance. The IT governance concept is directed so that it meets

present and future demands of the business and the business' customers [36, 4], [43, 4]. IT governance should be present in the leadership as well as in the organizational structures and processes in order to achieve the organization strategy and objectives, and can therefore be found within the domain of the Board of Directors and executive management's responsibility [26], [5], [29, 310]. IT governance contributes to the achievement of business that is organizational goals in terms of transformation and implementation of the entire IT. In accordance with that, Weill defines IT governance as a task in the direction "… specifying the framework for decision rights and accountabilities to encourage a desirable behavior in the use of IT" [48].

In relation to IT management, IT governance is seen as a higher level activity and strategically a more significant one (Fig. 1). It is primary for IT management to be focused on the daily rational, effective and efficient approach to supplement the IT services and IT operations. IT governance is aimed at ensuring that the IT is aligned with the main goals of the business [43], [20].

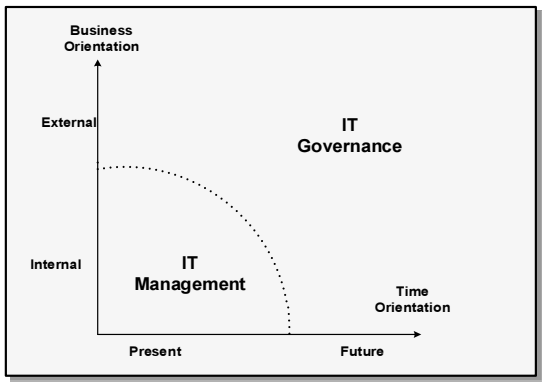

Figure 1. IT governance and IT management [36].

According to its original meaning, IT governance is concerned with two issues: IT delivery of value to the business and mitigation of IT risks [25]. In line with that view, two main approaches and understandings of IT governance are identified: one focused on decision making and accountability, while the other approach puts forward the topic of controls and risk management [2], [37]. Furthermore, in [36, 72] it is stated that IT governance describes (a) the distribution of IT decision-making rights and responsibilities, and (b) the rules and procedures for making and monitoring decisions on strategic IT concerns. England [12] gives the definition of governance as a practice of controlling behavior and processes by: creating a mechanism by defining roles, responsibilities, decision rights, and accountability; defining and managing the bounds to restrict behavior; reacting to excess to bring it back within the bounds.

Related to this view and trying to find a more detailed description, according to [41], [27] IT governance should include five different components, with related constructive characteristics:

1. Business /IT strategic alignment
2. IT value creation and delivery
3. IT risk management and/or value preservation
4. IT resource management
5. Performance measurement in IT

In each organization it is especially important to properly manage IT resources through a set of IT processes which provide the necessary information to the organization, in order to achieve its objectives [35], [32]. According to [11], and in line with the previous research, such as Peterson [36], Van Grembergen, De Haes and Guldentops [44] in relation to the possibility for an organization to successfully implement a sustainable IT governance framework, IT governance should include an appropriate combination of structures, processes and relational mechanisms.

In order to improve the IT governance, so that IT operations' alignment with business goals and objectives would be more reliably ensured, corresponding frameworks have been developed and are now applied, such as ITIL, COBIT, ISO17799. From the mentioned frameworks, the most comprehensive one is COBIT, according to [46]. Popular frameworks are COBIT and ITIL, according to [37] they go much further than IT governance "... through inclusion of specific practices and implementation advice for IT management, controls, and assurance."

Due to the mentioned reasons, by researching the Croatian public administration practice, it is significant to analyze the supporting frameworks.

3 COBIT

According to [27],[39] COBIT is designed to be an IT governance aid with regards to understanding and managing of the risks and benefits associated with information and related technology. Conceptual framework of COBIT can be seen from three dimensions: (1) IT Processes, (2) Information Criteria and (3) IT Resources [39].

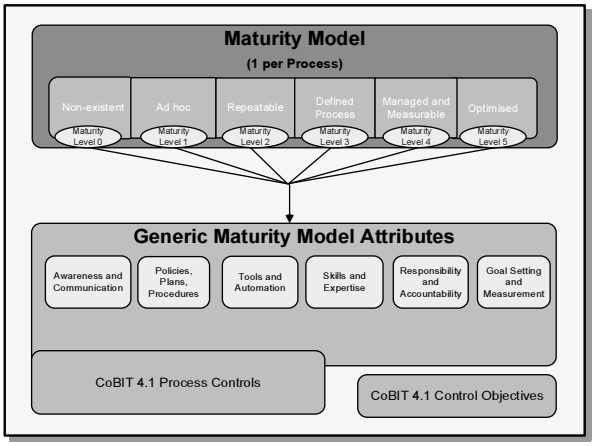

Figure 2. Graphic representation of COBIT 4.1 maturity model [24, 41]

Management guidelines in COBIT structure consist of: Maturity Models, Critical Success Factors, Key Performance Indicators, Key Goal Indicators. COBIT maturity model (Fig. 2) presupposes levels analogue to other maturity models [25, 49].Along with the maturity model, which is relatively recognizable among managers, for the purpose of research of the successful application of IT governance, COBIT concept CFS (Critical Success Factors) is popular as well. According to [38], CSFs are the limited number of areas in which satisfactory results will ensure successful performance for the organization, therefore CSFs are the few key areas where „things must go right" for the goals to be attained. Some research were directed toward determining the condition by applying the CSF concept. Therefore, in the paper [34] CSF for effective IT governance in the public sector organizations were determined in the case of Tanzania, which is an example of developing country.

The newest version of COBIT 5, being a framework, is considered by IT governance through five domains: Evaluate, Direct and Monitor; Align, Plan and Organize; Build, Acquire and Implement; Deliver, Service and Support (DSS); and Monitor, Evaluate and Assess. The mentioned domains contain 37 high-level processes and another 300 detailed controls [24].

COBIT Principles were defined for COBIT 5 framework [4]: Meeting Stakeholder Needs, Covering the Enterprise End-to-end, Applying a Single Integrated Framework, Enabling a Holistic Approach and Separating Governance from Management. Principle 4 is especially useful potential: *Enabling a Holistic Approach*. The concept enabler can be seen in its purpose, which is to support the effective governance and management system for IT in the enterprise [4, p. 15-16]. There are seven categories of enablers, within the framework:

- Principles, policies and frameworks
- Processes
- Organizational structures
- Culture, ethics and behavior
- Information
- Services, infrastructure and applications
- People, skills and competencies

Enablers are in interaction and governance cannot succeed without the active participation of all the enablers.

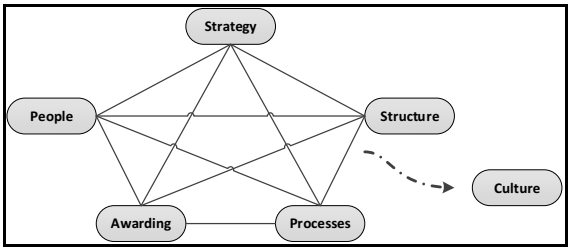

Figure 3. Organizational design [19], modified.

Almost all the mentioned categories have their well recognizable place within the framework of the organizational design, as in Galbraith's model [19], Fig. 3. *There are indications that failure in the implementation of certain IT Governance situations, can therefore be assigned to the problem with classic type enablers whose unsatisfactory condition prevents the achievement of Holistic Approach COBIT, i.e. it obstructs the efficiency of IT governance.*

COBIT research as a part of IT governance framework is shown in [42], whereat he accent was in examining its conceptual consistency. According to [1] there is little academic research which would quantitatively strictly evaluate the effectiveness of COBIT framework or determine the quality of its acceptability in the private and public sectors. There have been reports [46] regarding the level of demand of COBIT and practical issues caused by complicated concepts and structure as well as the lack of implementation guidance and proven benefits.

One of the ways to overcome the complexity of COBIT is its positioning within the context of those tools which are common and recognized by the managers and others who are responsible. One of such methods is a managerial tool Balanced Scorecard. The other concept, which we would like to single out, is the positioning of COBIT towards the concept of managing human resources.

3.1 COBIT and BSc

The famous tool for measuring the organizational performances is primarily intended for corporations. According to Kaplan [28], Balanced Scorecard (BSc) has a higher possibility for the purpose of improving management in the public sector. According to the BSc framework, the well-known perspectives for the result evaluation in the organization are: Learning & Growth Perspective, Business Process Perspective, Customer Perspective and Financial Perspective.

In the paper [45] IT governance framework, in line with the hypotheses from [4], is put in the context of organizational design, linked to the structure and processes (see Fig. 3). Emphasis on the connectedness of the IT governance concept and organizational design models comes out of the determining that the key components of IT governance include: defining IT organizational structure and processes, as well as alignment of main IT goals with organizational business goals, while at the same time leveraging IT resources and ensuring IT performance [26]. Parts and perspectives of BSC are aligned with the COBIT components, in the deliberations of a number of researchers.

3.2 COBIT and human resources

With regard to the human resources – according to the list of COBIT processes, in the domain "Plan and

Organize", we come across PO7 "Manage IT human resource".

Regarding the human resources, COBIT&BSc model is set out in [46], where BSc perspectives (views) are emphasized. At the same time IT Learning and Growth contains COBIT control objectives PO7 and DS7. This approach of looking at COBIT control objects within the structure of BSC framework enables a potentially better understanding of COBIT framework by managers who lack a more solid background in IT. According to [13], the category of COBIT goals regarding "Skills and knowledge" can be positioned in the perspective of "Learning and growth" within the BSc framework.

In the paper [45], respecting the *Metrics* for and IT Governance BCS, and in the *Perspective* called *Future Orientation* and related to the Mission *Ensuring effective and sustained IT governance*- for the corresponding *Objective* called *Skills and Knowledge*, the authors define the following Measures*: Number and level of cross-functional business/IT training sessions; Number of overall IT governance training sessions; Percentage of completed IT governance education per skill type; Number of IT governance presentations for CEO and Board members; Level and use of IT governance knowledge management system.* Indicators regarding the mentioned measures, where the humane resources are focused, can be applied for the purpose of researching particular case versions. It is especially valuable to put these measures within the context of responsibility which is used as a concept by [40] in seven levels of responsibilities (follow; assist; apply; enable; assure, advise, initiate; influence and set strategy, inspire, mobilize) which are based on autonomy, influence, complexity and business skills expected and demanded.

In the theory of strategic management, the classification of organizational resources/assets into the categories of tangibles and intangibles is known. Human resources with competences, skills and so on, belong into the category of intangible assets. Cinca, Molinero and Queiroz [7] consider that there was less urgency for public sector managers to quantify their intangible assets, while the private sector is significantly more often interested in such evaluation. The intellectual capital, important for the success of IT Governance, is regarded as a part of intangible assets. The intellectual capital, within the context of public sector, was the subject of research in the paper [47].

4 IT Governance in the public sector

According to [21], IT governance in the public sector represents a more complex task than IT governance in the private sector. Due to a smaller degree of flexibility, different programs and generally a higher level of structure formalization, the public sector usually lags behind the private sector organizations in the areas of IT development, implementation and governance [6], [5].

The attempts to determine and classify the differences among the public sector when compared to the private sector can be seen in [32], while examining ITC governance, Those differences include: Differences in environmental factors; Differences in organization -environment transactions; Differences in internal structures and processes.

According to Andersen [2], the technological solutions such as enabling data integration that enable national government to harvest *economics-of-scale* benefits, improve document repository facilities, and reduce transaction costs surely represent good motives for the government to invest in IT. According to [8], [23], the so-called New Public Management (NPM), has driven Governments' investments in public sector information systems in most countries around the world. The latest approach, present in many developed countries is called "the joined-up initiatives". It represents the actions directed towards meeting the needs for a more efficient and effective public administration [8]. Although ICT developments in the public sector deserve support, more attention should be given to its implementation, with particular focus on the potential consequences of the transformation of the relationship between the citizens and the state [8].

Within the public sector there is a great potential for business process optimization, primarily regarding the implementation of ICT and the corresponding ICT investments [33], [3].

4.1 IT Governance in the public administration- Case of Croatia

Being an EU member, Croatia strives to achieve the standard of public administration functioning similar to the one in the developed EU member countries. Having that in mind, the document [14, 63] shows the condition in a coordinated system "Online availability of services" vs. ICT expenditure as percentage of GDP, where Croatia does not go over 50% of the best achievers in the both graph values.

The document [16] The European Interoperability Framework, being a reference of vision and plans, was published with the intention:

- to promote and support the delivery of European public services by fostering cross-border and cross-sectoral interoperability;
- to guide public administrations in their work to provide European public services to businesses and citizens;
- to complement and tie together the various National Interoperability Frameworks (NIFs) at European level.

Regarding the interoperability in the EIF, EC recognized four layers of interoperability: legal, organizational, semantic and technical [16, 8]. The action on interoperability is essential to maximize the social and economic potential of ICT [20].

Within the framework of the Croatian public government 20 ministries, 4 state offices, 7 state

administrative organizations and 20 government offices throughout different counties have been founded [9, 44]. The objectives of public administration development are [9, 5]:

- simplification and modernization of administrative procedures,
- ensuring a reliable and fast support to the public administration for the citizens and the economy through e-administration project implementation
- advances in the system of development and management of human resources with the purpose of creating a modern public service
- reforms of the administrative system in line with the European standard based best practice and good management.

The draft Strategy [9, 14] analyzes the reasons for the present inadequate ICT use in the Croatian public sector. The analysis found the following reasons:

a. inadequate level of awareness on the ICT possibilities;
b. inadequate level of education of the public administration employees to use ICT
c. a low level of expert employees familiar with both the business processes and new technologies;
d. ICT equipment in most public institutions is obsolete and inadequate.

Concerning the Croatian public sector, the strategy-draft document [9] points out that the Croatian public administration does not use ICT solutions sufficiently. In the developmental sense, we are on the level of transactional information systems, i.e. at the level of simple data entering. Identified reasons are set forth, with the focus on the issue of human resources.

The ICT development in Croatia has been especially significant in the recent years. According to the share of ICT companies in the total number of companies in Croatia, in the period from 1999 to 2009, the percentage of the share grew from 3.7 % to 8 % (this does not include the telecommunications sector). The share of ICT revenue in the total economic revenue has also been significantly growing [18, 22].

The press release [10] of the Croatian CBS, regarding the data on average gross earnings per person in employment, for January 2015, states that the average salary in the Information and communication sector was 11,854.00 kunas (approx. 1550 EUR). In the *Public administration and defence* the salary amounted to 8,445.00 kn (approx. 1105 EUR). This significant difference in salaries indicates to a problem of attracting good quality of human resources knowledgeable in the area of IT into the public sector.

Concerning the research questions, it is clear that there are issues with the categories of enablers for support the effective governance and management system for IT, according to the COBIT 5 [4], and issues with the control objectives PO7 [22]. Given the fact that the analysis of documents revealed a problem of IT governance, especially in the area of human resources, to gain a deeper insight we will further explore this domain in the case of an organization from the Croatian public administration. In this way we will complete answers to our research questions.

5 Research in Croatian public administration

This constituent Organization, is analyzed concerning the human resources and their additional ICT training. Given the sensitivity of the data, we need to preserve their anonymity, but the Organization is chosen within the Croatian public government set of 20 ministries, 4 state offices and 7 state administrative organizations.

With regards to the IT governance in the service sector, and especially in the public sector, these previous research have proven useful: determining the most important COBIT control-objectives [1]; regarding obstacles in IT governance [31]; regarding the maturity process levels in the service sector where three main processes were recognized with high priority for improvement (among them was PO7 “Identify IT skills, position descriptions, salary ranges and personal performance benchmarks”) [22]. The authors [22] offered a useful breakdown of PO7 through 7 sub-processes. The measures listed in [45] were applicable, as well. Furthermore, Croatia has valuable analysis of the COBIT application within a big energy company, displayed in the paper [30]. The authors determined for all the 34 processes maturity levels and identified desirable improvements. One Croatian service company with knowledgeable characteristics was also researched by applying the People-CMM model [17].

In this research, the gained results are based on data processing of the continuous education and training in the IT field, of 162 employees from the Organization in the period 1998-2014. In the mentioned period these employees participated at a total of 238 training programs.

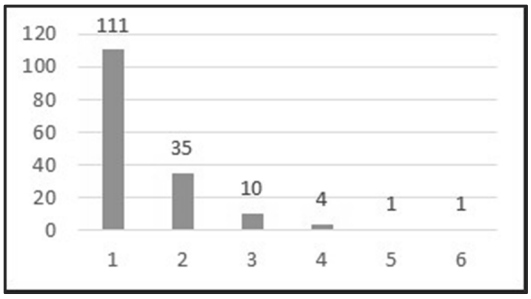

Figure 4. Number of people in relation to the number of educational programs (N=162).

Unfortunately, as it can be seen in Figure 4, most employees did only one course, and therefore this cannot be considered to be a continuous education. Furthermore, according to the employee profile, 23

employees (or 14.20 percent) has some educational background in the ICT filed- in information science, computer science, and telecommunication). Within the observed period these employees started 31 educational programs out of total of 238, which makes 13.03 percent.

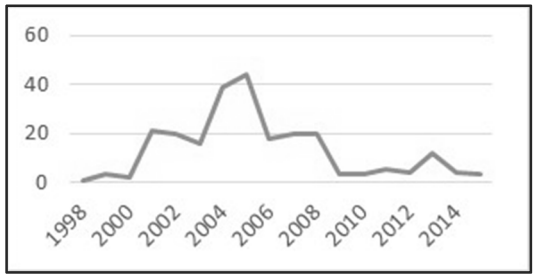

Figure 5. Number of educational programs over the years (N=238)

Unfortunately, the trend in the number of educational programs in Organization over the time is negative, and Figure 5 shows it continuous fall since 2005, and a mild increase in 2013.

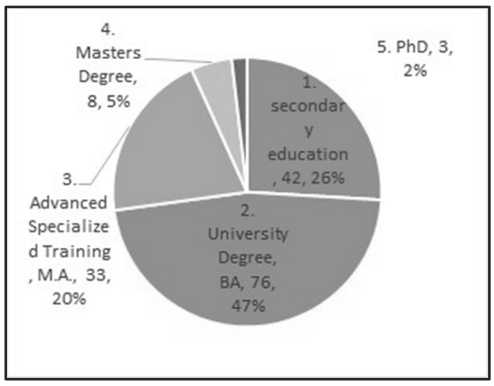

Figure 6. Percentage of employees according to educational qualifications

Regarding the level of education in the employee structure, in this Organization the higher educational level prevails (47%) (Fig. 6).

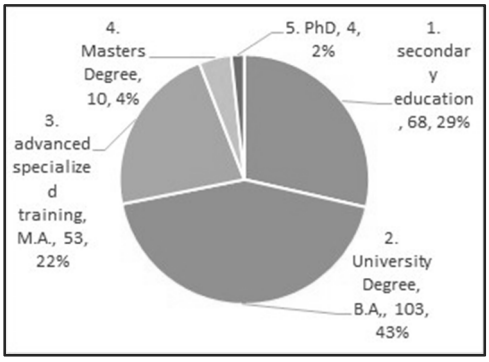

Figure 7. Percentage of educational courses according to educational qualification

Regarding the representation of the employees with a certain educational qualification, there is an approximate expected number of educational programs according to each category of qualification (Fig. 7). Figure 8 shows the distribution of 203 courses, out of the total of 238, which are defined by SFIA [40] according to the seven levels of responsibility. The graph lacks 35 courses which were attended by the employees whose *level of responsibility* at workplace, could not be determined.

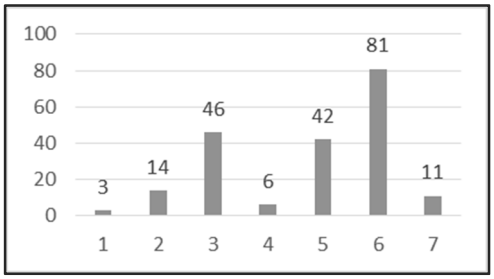

Figure 8. Number of courses according to the level of responsibility at workplace/employee jobs (N=203)

The results of Figure 8 indicate possible characteristics of organizational structure.

6 Conclusion

In this paper we considered IT Governance concepts, as well as supporting frameworks such as COBIT and BSc. Additionally, we gave an overview of organizational characteristics in the public sector which has been lately undergoing reforms worldwide. A part of public administration reform and their profiling, especially in the recent years, is based in the ICT implementation and as such leads to the changes in structures and processes.

With regards to our research objective, inadequate use of ICT in Croatian public administration has been confirmed, because of findings set out in 4.1 and due to results set out in 5. The obstacles for ICT implementation arises from more factors, three of which are considered to be related to the human resources [9].

The research done at one of the Croatian public administration organization, determined that most employees did only one educational training course, and the model of continuous education lacks. The trend in the number of educations is negative, with better results in the period from 2002 to 2008. The downward trend is probably in line to policies of savings in the public sector, with the beginning of the economic crisis in 2008. Croatia still has not recovered from this crisis. There are approximately only 13-14 % of employees who are doing additional training, and who have ICT background. This small percentage is not likely to increase significantly in the upcoming period, considering the employees in the Information and communication field in Croatia have much higher income than the employees in public administration. Many issues have been identified in the domain of COBIT goals “Skills and Knowledge” as well as in the perspective of “learning and growth”, within the BSc

framework. Therefore, we have given answers to research questions. By analogy, we assume that a situation which is proven for the selected organization, is also valid, unfortunately, in most of the parts of public administration system in Croatia. This conclusion we present as conditional, since we use certain simplified method of induction. It is also one of the limitations of our study.

Regarding these identified problems, certain level of awareness exist, close to management structures, as can be seen from considerations in 4.1, and this is promising. Our future research will be focused on the identification of possible ways of solving the issues of IT Governance in Croatian public administration.

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