

Model for Business and IT Alignment

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Abstract. *Research and practice indicate that the effects of ICT are often undersized and don't meet the expectations. Therefore, this area is striving to be explored now days, in order to reach the necessary knowledge on the increase of these effects.*

This paper offers brief view into different models for aligning business and IT system and their comparison. According to the results of this comparison and different researches in the area of effectiveness of IT, new model for business and IT alignment has been developed. It will be presented with all its activities and methods that can be used in different phases. This model can help that business and IT management harmonize their activities. Also, it can provide better IT use and contribution to achieving the business goals of the organization.

Keywords. Business-IT alignment; CobIT; Strategic planning; ITIL; IT BSC; Enterprise methodology.

1. Introduction

There is no doubt that IT implementation is a global process and of great importance for each country today, for its activities and for each business system. ICT is developing rapidly and has entered into pores of our work and life. However, the effectiveness of utilization of ICT is a question of many actual surveys.

There is a clear incentive for management to ensure that effective governance and management processes are in place to create value through optimizing benefits at an affordable cost with an acceptable level of risk. The results of a survey conducted by ITGI [5], confirms the problems executive management attaches to IT. Also, survey from Croatia shows the priorities which management has concerning IT. Because of that, last years many different models that could be used for business and IT alignment have issued. Some of them are presented in this article.

According to the results of analyses of these models, and survey conducted in Croatia, the new model for alignment of business and IT systems is suggested. All phases and elements of this model are presented. It is recognized through practice in some companies, but of course it is open for improvement and upgrade.

2. Models for aligning business and IT system

In this chapter overview of existing models for connection of business and ICT systems is given. Some of them are strategic planning of IS, Enterprise approach, ITIL, CobIT, IT Balanced Scorecard and others. All of them, in some way, contribute to harmonization of business and ICT system, starting with strategic affiliation, alignment of objectives on highest level or modeling of business processes and their presentation in ICT domain. Each of them can be used in particular segment, however combining them the greater value for the organization can be created. For this cause the comparison was made and was used afterwards in modeling of new model for harmonization of business and ICT system.

2.1. IT Strategic Management

Strategic planning of IS is a process of portfolio identification of computer applications which help the organization in executing their business plans and realization of business objectives. Strategic planning of IS is important activity of the top and IT management. Nevertheless, organizations often suppress in implementation of recommendation from SPIS studies.

Research [3] shows that strategic planning of information systems (SPIS) should focus on:

- Harmonization of investment in IS with business goals
- Utilization of IT for competitive advantage accomplishment

- Efficient and effective management of IS resources
- Development of technology politics and architectures

It is suggested that first two fields are connected with IS strategy, third with an information management strategy and fourth with an IT strategy. Research shows dominance of first two fields.

Table 1 shows the SPIS objectives sequenced by importance [3], from where is noted that most important recognized goal is harmonization of IS with business needs.

Table 1. SPIS objectives by importance

<i>Ordinal number</i>	<i>SPIS objectives</i>
1.	Harmonization of IS with business needs
2.	Seeking for competitive advantage from IT
3.	Support from top management
4.	Forecast of demands for IS resources
5.	Establishment of technologic orientation and politics

Key success factors for implementation of SPIS have been indentified in next order:

- Involvement of top management
- Support of top management
- Availability of business strategy
- Business analysis before technology
- Great IS management

There are a large number of researches and a contribution on topic of IS strategic planning in Croatia. One of the methodologies is a SPIS methodology from J.Brumeć [2], according to which strategic planning is consisted of 16 steps. Also, some researches [8] show the application of IS strategic planning in Croatian companies, from where is noted hat IT is considered as a tool for automation of existing processes where role of IT as a competitive resource on the market is neglected. As a reason to that, absence of adequate knowledge and interest for IT by leading management companies is recognized.

2.2. Enterprise Methodology

One of the possible approaches for better management and application of IT and information systems is surely the Enterprise methodology, whereat is possible to observe different approaches, such as Zachman frame, ARIS etc. For purpose of this work brief overview of ARIS methodology will be given.

ARIS methodology creates directions for development, optimization and implementation of integrated application systems. In the same time it explains to analysts of business processes how to observe, analyze, document and implement information system.

Under term ARIS we distinguish 4 aspects:

1. ARIS methodology provides us methods for modeling target structures which are included in informational model
2. ARIS methodology is an architecture for description of business processes
3. ARIS methodology is a basis for ARIS tool
4. ARIS house HOBE – house of business engineering represents the concept for straightforward computer supported management of business processes.

First step in creating requirements for architecture is a model which contains all base elements of description for business processes. Under term architecture in IT we describe types, functional characteristics and mutual links.

In first edition full description was used – modeling of computer supported informational system – from definition of requirements to description of implementation, according to which ARIS got a name – Architecture of Integrated Information Systems. Since the significance of business processes was increasing during time, new methods were appearing, like ABC, QA, which ARIS have also adopted.

Until then, in modeling of information system, data description approach had govern while description of mode was neglected – the process itself that uses same data. Even greater chaos has appeared when unique integrated system was creating. ARIS had tried to prevent domination of one single overview.

Problem of process description is his complexity, as it is shown in figure 1, where all common inputs and outputs from processes are displayed. Important information in a business process are e.g. data about process environment, initial and outcome events, performers, equipment used, hardware, application software, services, financial resources, organizational units, corporate objectives etc. As all denominated terms above are mutually linked, it is obvious that system structure is complicated.

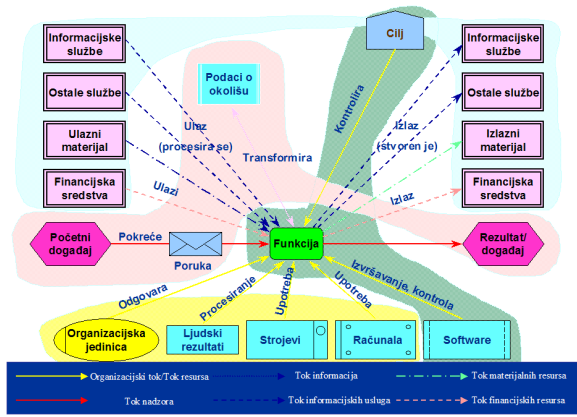


Figure 1. Demonstration of process complexity

It is clear that after comparison on strategic level, this approach can significantly contribute in implementation of fitted business goals and requirements towards IT and ensure more efficient usage of ICT.

2.3. ITIL

Now days, in order to accomplish business objectives and deliver required value to customers, organizations partly depend on their IT. In order to conduct that on manageable and iterative way, organization has to ensure high quality IT services which are:

- Linking business needs and customer requirements
- Harmonized with law regulations
- Created and delivered effectively and efficiently
- Monitored and enhanced continuously

IT Service Management is referring to planning, inventing, designing, implementation, production, support and enhancement of IT services which are harmonized with business needs. ITIL ensures comprehensive, consistent and cohesive frame of best practices for managing IT services and related processes, promoting high quality approach for achievement of business efficiency and productivity in managing IT services.

ITIL tries to support rather than dictate organizations' way of business process takeoff. Role of ITIL frame is to describe approaches, functions, roles and processes on which organization can base its own practice. Also, role of ITIL is to give directions to lowest level which can generally be changed. Under that level and for the implementation within organization, it is necessary to have specific knowledge of its business processes for ITIL adjustment in order to accomplish optimal efficiency.

It is useful to observe structure of service management as a pyramid, in conjunction with

international norm ISO/IEC 20000:2005 which is on top, figure 2. That represents formal specification and organization should demand for accreditation to prove compliance with norm requirements. Under peak of pyramid there is a layer with ITIL best practices directions which help with insurance and display of norm stipulation achievement.

On a similar way, ITIL processes can be used for accomplishment and display of compliance with CobIT control objectives. According to that, if ITIL is middle layer, ITIL customization for satisfaction of several organizational requirements is lowest layer, wide basis for ITIL implementation.

In 3rd version of ITIL the most significant progress was from frame which was based on processes towards more comprehensive structure which reflects IT service life circle. The preview that is mostly used is a preview of operational phases – design, transition and production – as a wheel bar, with a strategy on center and continuous enhancement of services all around. In this new context key processes are being edited, whereas the most significant thing is that ITIL now describes functions, activities and organizational structure of IT Service Management from strategic aspect as well as integration with business.

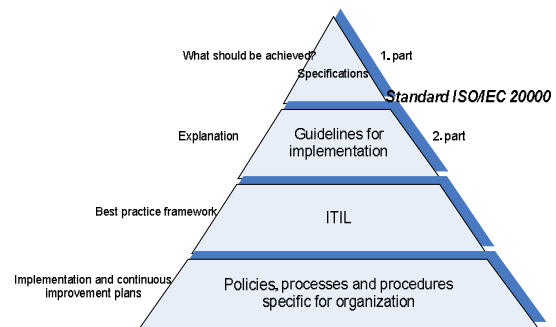


Figure 2. Structure of IT Services Management

2.4. CobIT

COBIT – *Control Objectives for Information and related Technology* represents great frame for IT governance through its domains, processes, goals, activities, maturity model and manageable and logic structure. This frame helps with optimization of investment in IT, insures the delivery of services and metrics for effective management, on the way that:

- Creates link between business requirements and IT by goals
- Defines responsibilities for goal achievements
- Organizes IT activities in generally accepted business model
- Identifies main IT resources on which it should be influenced

- Measures the maturity level of IT processes
- Defines manageable control goals which should be reconsidered.

Furthermore, COBIT is a great frame for application of internal revision, the grade for efficiency of existing informational systems in organization, as well as a grade in which extent IT supports business goals accomplishments of that organization. Next, through the results of internal revision the good basis are being created, suggestions for fields that need to be enhanced and compliance of business and information system as well as implementation of IT governance are being given.

Basic characteristics of COBIT frame are focus on business, process orientation and basis on controls and measurements. COBIT ensures information that organization needs in order to accomplish organizational goals. Also, it ensures information for decision making concerning investments, IT resources management and control, using structural assembly processes for providing services which, in the end, supply organization with necessary information, as it is displayed on figure 3.

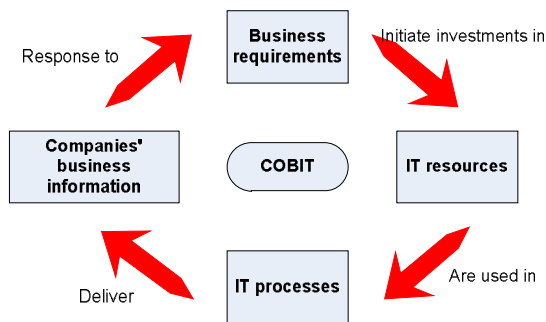


Figure 3. Basic CobIT principle [6]

COBIT defines IT activities through generic process model with 4 domains, 34 processes and 318 control goals. In order to manage IT in an effective way, it is important to keep track of activities and risks that need to be managed within IT. They are usually allocated within domains of planning, implementation, delivery and monitoring. Those domains are:

- Planning and organization (PO) – provides directions for solution delivery (AI) and delivery of services (DS);
- Acquisition and implementation (AI) – ensures solutions and enables that they are converted into services;
- Delivery and support (DS) – accepts solutions and makes them usable for final customers;
- Maintenance and evaluation (ME) – maintains all processes in order to ensure that they follow set directions.

2.5. IT BSC

Balanced Scorecard was firstly applied on business, afterwards on IT and therefore it became IT Balanced Scorecard. It is possible to connect IT BSC with business BSC and support IT Governance and process of harmonizing business and IT field in this way. Effectiveness measures of CobIT goals achievement in IT domain is possible to realize with application of IT BSC.

Firstly, Kaplan and Norton have implemented BSC on the organizational level in order to accomplish that evaluation of organization is not limited on just traditional financial evaluation, but to be fulfilled with metrics that are relating to customer satisfaction, internal processes and possibilities of business innovation. These additional metrics should ensure future financial results and lead organization towards accomplishment of strategic goals by keeping all perspectives in balance. They have suggested three-level structure for four perspectives:

1. Mission (e.g. to become main supplier for particular customer);
2. Goals (e.g. supply customers with new products);
3. Metrics (e.g. percentage of total income earned from new products).

Balanced Scorecard can be applied on IT function and its processes, such as were conceptually described by Gold [4], and additionally developed by Van Grembergen & Van Bruggen [10] and Van Grembergen & Timmerman [11].

By cascading the scorecard, harmonizing business and IT strategy can be supported. If we are talking about corporate governance, then we can explain that it is referring on possible ways that investor ensures return on investments. This definition is convertible into concrete questions: "How the investors achieve their managers to gain profit?", "How are they certain that managers do not steal their capital or invest in bad projects?", "How do investors control managers?"

IT Governance is a part of aggregative corporate governance and has to ensure mechanisms for IT surveillance, business harmonization and implementation processes [1]. IT governance can be defined as an organizational capacity for surveillance of formulation and implementation of IT strategy and as a guide for directing for purpose of achieving organizations competitive advantage.

I will give overview of BSC methodology which can ensure system of measurement and management that supports IT Governance process and harmonization of business and IT process

through cascading business and IT BSC for main IT processes: defining IT strategies, development of system and system work.

Perspective of customer focus presents customer evaluation of IT and level of CobIT goal accomplishment, observed through customer's perspective. Perspective of operative excellence presents IT processes which are used for development and delivery of applications, and are connected with CobIT processes in AI and DS domains. Perspective of future direction represents human and technology resources necessary for delivery of its services. Perspective of business contribution contains business value gotten from IT investments.

Generic IT BSC that is suggested links to business scorecard through perspective of contribution to business. Relationship between IT and business can be pointed out more explicitly through BSC cascade [9].

Scorecard supplies top management with key control measures about IT expenses, customer satisfaction, IT staff expertise and ensures comparison with benchmarking parameters. Thus, it avoids the IT reports towards top management to be restricted just on technical stuff and ensures detection of wrong directions or activities which are not in harmony with business strategy, in order to prevent them on time and adequately direct.

Since the goal was developing of model for harmonizing business and ICT system, as broader of any described approach, the comparison of analyzed approaches was made in order to recognize particular methods from each of them that have been used in development of models for harmonizing business and ICT system. Results of comparison, due to its volume, are not directly involves in this work but are indirectly visible in phase's display of emerged model.

3. Maturity of Croatian companies

We have conducted a research in 30 Croatian organizations for purpose of IT efficiency estimation and harmonization of business and IT system. Goal was to recognize major problems and priorities in order to enhance the efficiency of IT usage, so the given findings could be used in development of the model for successful harmonization of business and IT system. Also, they could in general be used for successful directing the IT development in particular organizations. Among mentioned organizations, the government institutions, public companies, universities, banks insurance companies, IT companies and other companies have been represented.

Research was made outdoors by interviewing employees and with an independent analysis of

existing state. Also, general directors and directors of IT companies have been interviewed in order to estimate the importance of particular controls. All in all, 80 interviews were made. All organizations have a developed IT department with their own development, maintenance and support to key organizational processes.

Estimation was made by applying CobIT frame in a way that, except the maturity level, estimation of importance of each control from aspect of informatics director on the one side and general organizations director on other side was entered. For needs of estimation and interview, questioners for maturity estimation and importance of controls by CobIT domains were prepared.

All given results were processed, consolidated and analyzed by different businesses: public administration, public companies, universities, banks, insurance companies, IT companies and other companies. Display of maturity levels of domain process planning and organization by mentioned businesses is shown on Kiviat graph, Fig. 4.

Significant difference between particular businesses was perceived by result analysis. It is noticeable in all processes the precedence of banks, while the worst position is taken by public administration. In PO10 Project Management process business companies are excelling, while the same are lapsing in IT Risk Management. IT Risk Management is also a great problem in universities and IT companies. While the PO6 Communication Management process is the strongest process in banks and insurance companies in this domain, that same process is the weakest point in public administration. Besides that, public administration has lousy results in fields of IT Quality Management and IT Risk Management. Within public companies, priority areas that have been recognized are first two PO domain processes: IT strategic planning and informatics architecture.

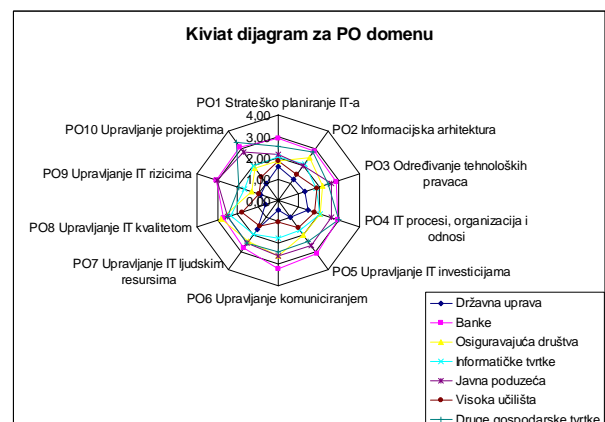


Figure 4. Maturity level of PO domain process by businesses

Display of maturity level of domain process of acquisition and implementation by mentioned businesses is noticeable on Kiviati graph, Fig. 5.

With analysis for IT domain it is shown that banks and other business are accomplishing great results in this domain, such as insurance companies, IT companies, public companies and other companies. It was expected since this domain is concerning operative application of IT. Despite that, in this domain public administration is significantly lapsing. Public Administration only exceeds level 2 in the IT resources procurement process while in Change Management is drastically beneath others.

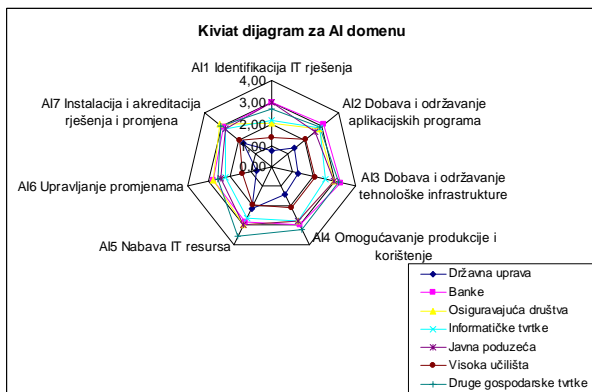


Figure 5. Maturity level of AI domain process by businesses

Display of maturity level of domain process of delivery and support by mentioned businesses is noticeable on Kiviati graph, Fig. 6.

With analysis for DS domain it is shown again that the banks are accomplishing great results in this domain. More other businesses are showing great results in this domain such as insurance companies, IT companies, public companies and other companies. These businesses have only one divergence in negative way on processes DS1 and DS6 i.e. for defining and managing service levels and identification and allocation of IT costs. It is so because IT services still are not recognized as services and neither are managed in a proper way within organization. There are no clearly defined expected service levels that IT provides to the rest of organization. Moreover, IT costs are not clearly identified in connection to this.

In this domain public administration is significantly lapsing for other businesses. Public Administration, like other businesses, reaches lowest level (under 0,5) in DS1 and DS6 processes.

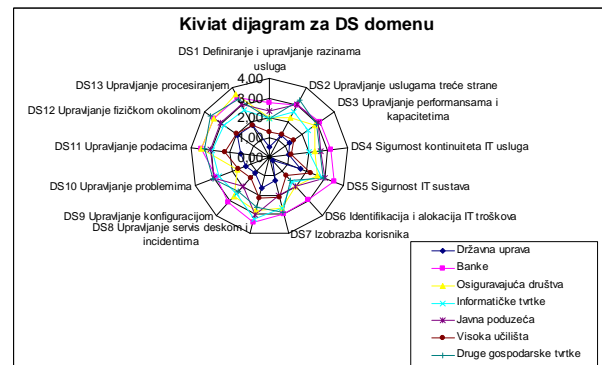


Figure 6. Maturity level of DS domain process by businesses

Display of maturity level of domain process of maintenance and evaluation by mentioned businesses is noticeable on Kiviati graph, Fig. 7.

With analysis of ME domain, it is shown that banks and public sectors achieved best results. Next, good results are achieved by other companies, insurance companies and IT companies, while the worst results are achieved by universities and public administration. This is domain where each company has relatively bad results if we compare them to results from other domains.

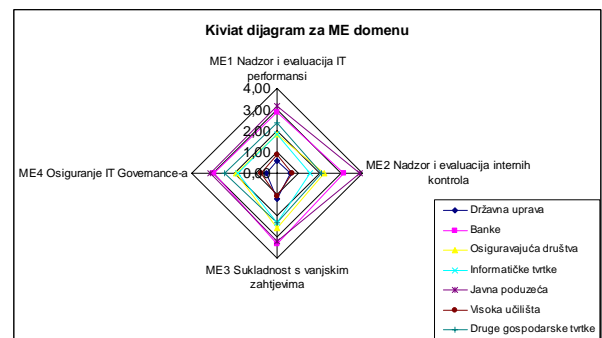


Figure 7. Maturity level of ME domain process by businesses

Furthermore, Kiviati diagram was made on the level of domains (for 4 domains) according to businesses, Fig. 8, from which the conclusion about leading business in each domain can be made.

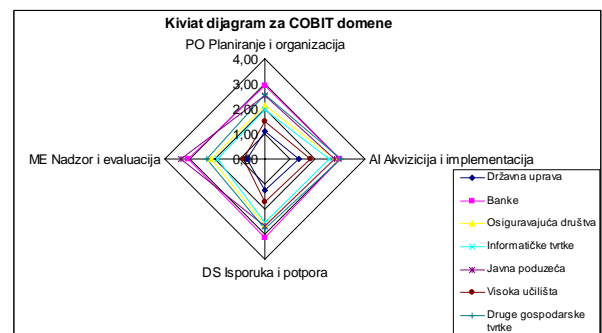


Figure 8. Maturity level of CobIT domains by businesses

Generally looking, the highest maturity levels according to COBIT domains are achieved by banks, whose advantage is particularly excelled in the domain of planning and organization. Public companies are by their side, and are on the higher level in maintenance and evaluation towards all other businesses. They are followed by insurance companies, IT and other companies. Those companies are lapsing only in the maintenance and evaluation domain while they are very close in AI and DS domains. Behind them are universities and public administration which is lapsing in all domains. From information mentioned above it can be concluded that private companies are achieving greater maturity level toward public administration. Also, it is shown that maintenance and evaluation are poorly represented in most of the organizations even although the management considers them as very important. As it was expected, AI and DS domains are the best. These are domains with most operative controls and everyday activities.

4. New model for business and IT alignment

With the research analysis in the importance field of particular CobIT controls, it led to conclusion when aligning business and IT system the emphasis should be on 19 controls from PO domain, 10 controls from AI domain, 20 controls from DS domain and 9 controls from ME domain.

Whereat, of course, should be noted that other controls are not negligible, but the practice shows that there are in the most part represented or in our circumstances are not as important as one mentioned above. In any case, by 80:20 principles, including all mentioned controls we can get rid of great part of existing problems in connection business and ICT system. Since in proving the hypothesis 1 is shown that efficiency of investment in ICT depends on investment structure and environment i.e. if the investment is in something that is already functioning well or is not directly connected to business goals, the positive movement won't be noticed after investment. If we concentrate on really important things during investment, which are strategically recognized and defined in organizational plans, and are not developed, then the result of that investment would have to be significant. It is clear that things which will contribute to connection of investment in ICT with key organizational directives should be taken into consideration.

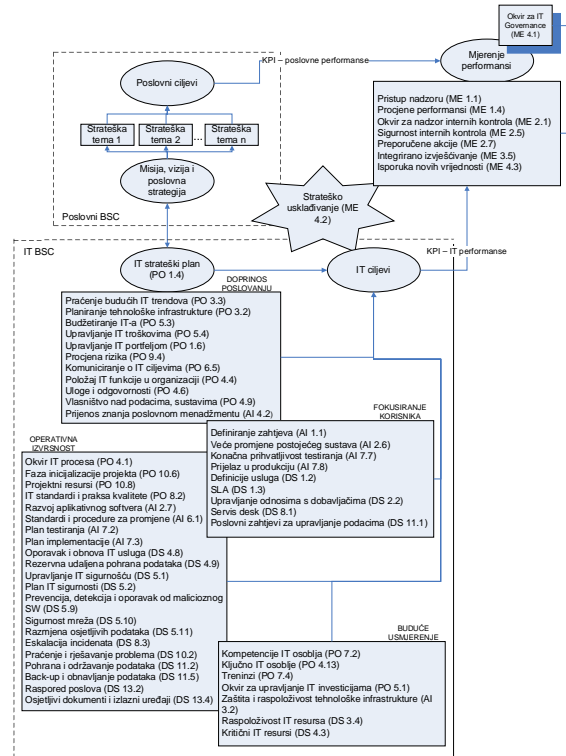


Figure 9. Graphical overview of the model for alignment of business and IT systems

Due to that they are implemented in BSC frame when producing model of this key control which can contribute to harmonization. Taking into consideration the fact that IT BSC model is in direct conjunction with business BSC i.e. arises from it and expectantly affects him.

Suggested model is contained from 28 processes and 58 controls implemented in IT BSC frame. In application of this model methods and techniques from approaches (SPIS, ITIL, and Enterprise) can be used in phases they are supplementing with as it is shown in table 4.1. Graphic overview of the model is noticeable in figure 9.

5. Main activities and methods in the model

For application of this model it is necessary to conduct more phases which are described in detail in table 2. There are identified expected inputs and outputs, methods and techniques by phases and also other possible approaches in their realizations. It is shown that, besides basic CobIT and IT BSC, significant application in particular phases have SPIS, ITIL, and Enterprise approach.

Table 2. Phases of the model for alignment of business and IT systems

No	Phase BS-IT harmonization	Methods and techniques / other	Inputs / Outputs
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		approaches	
1. Development of business ICT			
1.a	Defining the mission, vision and organizational strategy	Brainstorming Internal and external analysis (SWOT) / BSC, Enterprise approach	Business processes, products and services of organization, resources, stakeholders/ the mission, vision and organizational strategy
1.b	Identification of strategic themes	Brainstorming / BSC	Mission and vision of organization/ Strategic themes
1.c	Defining business goals according to themes and perspectives	Strategic map techniques Brainstorming Interviewing / BSC	Mission and vision of organization, Strategic themes / Business goals of the organization (Strategic map)
2. Production of IT BSC and strategic harmonization (CobIT control ME 4.2)			
2.a	Defining IT strategic plan	1 st and 2 nd phase of SPIS Cascading business and IT CobIT control PO 1.4	Mission and vision, business goals of organization / IT strategic plan (initial directions), Priorities of IS development
2.b	Development of cons and pros maps by perspectives (taking into consideration CobIT controls defined according to perspective-on graphic overview)	Strategic map technique Brainstorming Interviewing / IT BSC, supporting CobIT controls for every perspective, supporting ITIL processes	IT strategic plan (initial directions) / cons and pros map
2.c	Defining IT goals by (business contribution, customer focus, operative excellence and future orientation)	Brainstorming Interviewing / IT BSC, CobIT control goals (like in previous phase)	Cons and pros map / IT goals by perspective (harmonized with CobIT controls)
3. Performance measurement and production frame for IT Governance (CobIT control ME 4.1)			
3.a	Defining KPIs for business and IT goals	BSC, IT BSC, SPIS – phase 16, CobIT ME	Business goals of organization ,

		1.4	IT goals by perspectives / KPIs for measurement of goals accomplishment, IT strategic plan (supplement)
3.b	Defining frames for measurement, reporting and proposals for improvement (CobIT ME controls defined on graphical overview)	Organizational diagram / BSC and IT BSC, CobIT – ME 1.1, 1.4, 2.1, 2.5, 2.7, 3.5, 4.1, 4.3, SPIS – phase 2, 9 and 16, supporting ITIL processes (table 5.6)	Existing organizational scheme, mission and vision of organization, IT strategic plan / New organization, frame for IT Governance, performances of business and IT system, information for top management

In order to apply ICT effectively and to support business system, it is necessary to have a clearly defined strategy and business objectives. Although it is not part of the problem dealt by informatics, it is certainly an important prerequisite for successful alignment of business and IT systems. Business planning and defining the goals can be implemented in different ways, but research shows that very often and well defined strategies fell in practice and are never implemented. Therefore, it is here as a first step, or perhaps better said as a fore step, proposed activity for business BSC architecture. It implies defining or reviewing the mission and vision of the observed organization, and a proposal for its further strategy. Also there are several approaches in applying the BSC, but I have come through the application of this method in practice to the point that the best way to define a great number of strategic issues that are important for the organization, in the field of selling the goods or services, in its own development, in personnel development, etc.

The second step is the step of building IT BSC and strategic alignment with business strategy and goals. At this phase the most important control objectives of CobiT are used and are defined in this chapter. One of them is the IT Strategic Plan (PO 1.4), which is part of an overall strategy of the organization, and as is noticeable from the graphical display, for its development the inputs gained from business strategy are important, with the possibility of feedback and impact on business strategy.

Link to the Business BSC is achieved through the contribution of business perspective, in which

the goals of the management of IT costs and IT portfolio are set and preconditions for the development of a strategic plan through monitoring of future IT trends and technology infrastructure planning are created. Also, roles and responsibilities and etc. are clearly defined, in accordance with the CobiT control objectives which are defined in the graph.

At the peak of the business contribution perspective in maps of causes and consequences, the other perspectives are added in the following order: customer focus, operative excellence and future orientation. In this way, objectives in all perspectives of IT BSC are defined and are linked in maps of causes and consequences. In perspective of customer focus it needs to take into account the clear definition of requirements, SLA and service definition, service desk, final testing and transition to production, and also the management and relations with supplier. In the perspective of operational excellence the focus is on IT process framework (PO 4.1), with all their key phases, starting with the initialization of the project, development, testing and implementation, and also supporting standards and activities to assure quality and safety. In the perspective of future directions the goals that will enable and support the achievement of goals in all these perspectives with them in the cause-effect relationship are defined. In doing so, CobiT control objectives are helping us, which are defined in this perspective, and are relating to staff development and technology infrastructures. In this way we define all IT goals aligned with business objectives.

Therefore, this step we cannot even tell its going completely sequentially behind the construction business BSC, since such activities are substantially intertwined and are affecting one another.

For all the set objectives KPIs are defined and the framework for IT Governance is created (ME 4.1), and thus assures a complete monitoring and measuring performance. In doing so, the control objectives in CobiT ME domain are implemented. This will ensure continuous improvement and delivery of new value. This approach also allows integrated reporting to all stakeholders.

Experience shows that after the implementation of this procedure, the level of CobiT control objectives is significantly raised and management recognizes concrete effects and contributions of IT in business and business goals achievement.

6. Conclusion

In this paper, it is highlighted a number of models that can be used for business and IT alignment. Despite of that, the research shows low effectiveness in using IT and low level of business

and IT alignment. Generally speaking, the banks and market oriented companies have better results in using IT than public ones. Also, it is obvious that CobiT domains monitoring and evaluation is much lower than other domains in most organization. The domains with the highest levels are AI (Acquire and Implement) and DS (Deliver and Support). Importance of specific CobiT controls was also determined from CIO's and CEO's point of view. That was used for developing a new model for business and IT alignment. In this paper the key elements and phases of this model were presented. It could lead to improvement of using IT for the purpose of achieving better business results.

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