Management of Business Informatics and Performance Management

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Abstract. The proposed conceptual model verifies applicability of traditional Morton’s model in Business Informatics and extend this model for new view that is transformed into Business Informatics Performance Management Model. We are analyzing applicability of Morton’s model in Business Informatics and Business Intelligence and then we are proposing new Business Informatics Performance Management Model. This new structured approach for description of Business Informatics performance measurement and management needs helps organizations with clear statement how they want to implement BIPMS in their environment. We tested our model with Business Intelligence service that is described and defined by our model. It proves that model can provide management of Business Informatics a tool how to describe performance measurement and management in a consistent and structured way.

Keywords: Business Intelligence, Corporate Performance Management, Morton Model, Business Informatics, Performance Management Model

1. Introduction

Organizations compete for customers, for access to raw materials, for access to new markets, for the right to develop new products to gain profit. Not-for-profit organizations compete for donations and grants; political parties compete for votes; government agencies compete for funding from general fund budgets. Competition is a part of everyday existence for most of organizations, and, when viewed from a longer-term perspective, it is a fact of life for all organizations. Within this competitive environment, many organizations have successfully used IT (Information Technology) to help them compete. (Gamayanto, 2005; Scott, Rockart, & Michael, 1983).

The main target of the company is achieving its goals and especially achieving profit (Berry, Coad, Harris, Otley, & Stringer, 2009; Gartner, 2001; Young, 1966). The company’s management is responsible for these two goals and reaching them requires exact information about company’s economic situation to be able to set paths to these aims. This information is represented with measures, metrics and their values.

Measuring results and performances have a long tradition. Rapid development in this area is visible especially in last ten years.

Management requires information not only about the company as a whole but also detail information about each of company’s parts. These necessities are closely connected with company’s owners’ requirements on providing information about company’s economic situation. One of the most important factors that is influencing availability of information is quality of the Business Informatics.

Usually we are able to set up processes etc. in the Business Informatics to be able to get all necessary information but this is closely connected with cost that has indisputable role in company’s life. Business informatics defined in our conception is based on the (Retzer, 2007). Modified definition describes Business Informatics as processes, equipment and employees providing IT services in the company indisputably became one of the key components of the business success in majority of business sectors.

Significance of processes, measuring and management of company and its informatics economic is emphasized by the fact that companies don’t ask questions, what profits offer and cause the investments into/upgrades of information systems and communication technologies (IS/ICT), but the companies ask, what money they lose when the investments/upgrades aren’t implemented.
This is important rule that has been confirmed by the Scott Morton’s Model that proved in his model that Information Technologies are one of crucial organizational components (Gamayanto, 2005; Scott et al., 1983).

The aim of this paper is to analyze applicability of traditional Morton’s model (Gamayanto, 2005; Scott et al., 1983) in the area of business informatics that plays crucial role in company. We are also analyzing position of Business Informatics and Business Intelligence in Morton’s model, what’s a structure of business informatics and a way how can performance of Business Informatics be managed. We are also extending this model for Business Informatics Performance Management Model.

2. Business Informatics in a Company and Performance Management and Organizational Structure

The Business Informatics, Company, Management and Organizational Structure are used in the context of definition that follows. Business Informatics are processes, equipment and employees providing IT services (Retzer, 2007). A company is any entity that engages in business (Gurvis, 2007). Management is the function that coordinates the efforts of people to accomplish goals and objectives by using available resources efficiently and effectively (Hitt, Ireland, & Hoskisson, 2014). Organizational structure defines how activities such as task allocation, coordination and supervision are directed toward the achievement of organizational aims (Avison, Jones, Powell, & Wilson, 2004; Hill & Jones, 2012).

All of these definitions and others enter into Morton’s Model. As the Scott Morton says (see Figure 1), the most important component of the company are (Allen & Morton, 1994):

- Organizational Structure and Corporate Culture,
- Individuals and Roles,
- Organization’s Strategy,
- Information Technologies,
- Management Processes.

Scott Morton says that all components mentioned in the model are important but information technologies and individuals are the most important one (Allen & Morton, 1994; Morton, 1991). Individuals and human resources in general are essence of the organization and crucial factor that influence other components in the model.

Information technologies help us in management of individual and human resources in general they help us with communication between us and individual in the company, passing information to individual and help us with management of the organization from all management levels. Very important is interconnection to company strategy that tell us, what kind of target company has and what should be filled by the other company components.

![Fig. 1. Scott Morton’s Model, (source: Allen & Morton, 1994; Morton, 1991)](image_url)

2.1 Company Management

Company Management is responsible to stakeholders and he is responsible for all activities and actions that are realized in a company. Company management can be split into three levels (see...
Figure 2). Each of these levels is responsible for their tasks and responsibilities. Lower level is usually supporting higher level and each task in each level are managed by manager from defined level.

2.2 Business Informatics
The Business Informatics is specific area of a company. Business Informatics is on all levels of a company and from this reason the Business Informatics has similar structure as a company (three levels) although Business Informatics can be only one part of a company. In this form the Business Informatics provides services to other parts of a company and for these services the processes and resources are used.

2.3 Business Informatics Services – Business Intelligence Service
There is plenty of different services provided by the Business Informatics to company. One of good examples is service of Business Intelligence. This service covers several areas (data quality, metadata, integrated reporting etc.) and all of them are provided and charged as one services. The quality and safety of a service is in responsibility of Business Informatics.

3. Discussion
Current economic situation and strategic decision in times of changing parameters cause requirements for right information about status of an organization (Zinkevičiūte, 2007). Management
needs information in good quality not only about whole company but about each part of a company (division, unit, processes, products etc.). One of these parts can be Business Informatics.

Business Informatics supports company business by providing services for company other processes and activities. Business informatics must be aligned with company needs in order to maximize value provided by it. Company needs drive development and improvement of Business Informatics and Business Informatics enables covering of company needs.

Fig. 5. Alignment of company needs and business informatics (source: authors)

Performance measurement and management of Business Informatics is very important tool supporting management of Business Informatics. Performance management can be differentiating factor for the Business Informatics to succeed or fail in company environment.

Model for measuring Business Informatics that we are describing in this paper extends traditional Morton's model with another view and helps company management with cleaning and aligning their requirements and expectations. Performance measurement and management as a discipline is performed in organization by Business Informatics Performance Management System (BIPMS). BIPMS components are described on Figure 6

Fig. 6. Business Informatics Performance Management System (BIPMS) and its components (source: authors)

BIPMS purpose in general is to support decision making process of Business Informatics management by measuring current level of performance and help with meeting desired target performance levels. This general purpose can be more detailed or specified according to company needs. BIPMS is a dynamic system that incorporates also acting on measured performance levels (Bititci, Turner, & Begemann, 2000).

Implementation and evolution of BIPMS is governed through definition of BIPMS strategy and setting of a methodology for implementation. Both of these artifacts define architecture and relationships between four basic BIPMS components: people, processes, technology and information. People aspect covers owners, customers, users, roles and organization structure. Processes are ways how performance management is governed, changed, used and operated. Tools and technology are necessary assets to provide support for performance management. Information and data covers data sources, transformation, KPIs and information outputs that are produced from performance
management discipline. Interaction and integration between BIPMS components is the basic way how performance management is executed.

When discussing BIPMS role and position in Business Informatics, we need to create context for BIPMS. We propose Business Informatics Performance Management Model (BIPMM) as an artifact to describe BIPMS in context of an organization and tool to help manage performance of Business Informatics as a part of a company.

The BIPMM is described in Figure 7.

BIPMM in its core uses BIPMS structure that can be used for description of performance measurement and management in organization context.

On top level, there is relationship between Business and Business Informatics. Business Informatics provides services that support business and helps business achieve its goals. With regards to performance management, key Business Informatics areas of which performance should be managed are:

- Stakeholder needs, strategy and goals
- Business Informatics products and services
- Business Informatics organizational structure
- Business Informatics processes
- Financial resources
- Human resources
- Technology resources

Some of these areas are not explicitly mentioned in Morton’s model, notably services and financial resources. Reason for including services is a close relationship between Business Informatics and its mission to provide support for business activities. This support has the form of services so management of services performance is logical way how to manage performance of Business Informatics key mission. Inclusion of financial resources is based on importance of finance in management of current companies and one of resource that was used in Business Informatics.

Business Informatics areas for performance management can be considered as content areas and they can be used as a basis for viewpoints to describe BIPMS. This approach creates basic taxonomy for BIPMM artifacts as shown in Figure 8. BIPMM artifacts are describing BIPMS in organization and their aggregation provides description of BIPMM instance in organization. BIPMS is organization specific and this leads to BIPMM to be also different between different organizations.
Fig. 8. BIPMM areas and management levels to provide taxonomy for BIPMS descriptions

Since performance management is a lot about decision making and answering questions, we can identify typical problems in each content area. Performance of Business Informatics strategy and goal is mainly about meeting stakeholder needs and alignment of IT with a business side of company. Performance of IT services is typically measured with meeting defined SLAs but service performance is also associated with service portfolio and overall effectivity of provided services. Organization structure performance is determined by clear settings of competencies, separation of governance and management, clear link between organization and processes. Performance of Business Informatics processes includes both effectivity and efficiency of process definition and execution. Last but not least are areas that cover different kind of resources and their usage. These topics deal mainly with efficient use of resources available to Business Informatics and management of overall Business Informatics capacity.

3.1 Using the Business Informatics Performance Management Model

BIPMM in organization environment is described using artifacts that describe different aspects of organization BIPMM instance. These artifacts can vary in their form and formalization. Key requirement on the artifact is their conformance with BIPMM and orientation on description of BIPMS in the organization environment.

We will illustrate one of uses of BIPMM model on example of above mentioned Business Informatics Service of Business Intelligence Service (BI Service). BI Service is one of Business Informatics Services and its main business value is enabling information creation and dissemination with the use of data warehousing, data extraction and transformation, reporting, dashboards and other analytical tools. BI Service is usually used on all levels of Company management, i.e. strategic, tactical and operational level of management.

BI Service as a Business Informatics service is integrated with other Business Informatics components. BI Service is using Business Informatics resources, it is operated, supported and developed using processes, BI service has a link to organizational structure to persons and roles responsible for different aspects of this service. This integrated characteristic has also impact on Business Informatics performance management. Overall performance of Business Informatics can be measured and managed from different viewpoints and these viewpoints are mutually connected.

When we want to examine performance of BI Service, we must first define the management level we want to work on. In the area of products and services, strategic level is performance of whole services portfolio or existence of service in portfolio, tactical level corresponds with added value created for users or service usage type and on operational level the service performance deals with SLA fulfillment and response times. Management level defines questions and answers we want to get from BIPMS.

Let’s consider we want to examine performance of BI Service on tactical level. This will lead us to definition of questions like:

- Does BI Service provide value for its users?
- Is BI Service used effectively to support business activities?
- Is BI Service usage growing or fading?
Above mentioned questions cannot be usually answered readily by Business Informatics staff. But we can use BIPMS to examine and manage performance of BI Services. We will use questions as an input to BIPMM model we will use to solve them.

When we have requirements, we should build next block of BIPMM that is strategy and methodology how we will fulfill requirements. This strategy than defines other aspects of BIPMM like people, process, tools and information. In our simple case we will define methodology to fulfill requirement to use our standard Business Informatics process of Service Portfolio Management with corresponding IT Service Management (ITSM) tool. As you can see, strategy and methodology shapes way how requirements are covered.

Next we must decide, which of BIPMS components (people, process, tools and information) will be described next. Different starting points can be used and selection is usually driven by requirement type, chosen management level, existence of problem solution, scope of problem etc.

First we will define data and information needed to fulfill our requirement. Key is to define key performance indicators (KPIs) and metrics that provide answers to questions we must deal with. Correct definition of KPIs is a key to successful implementation of performance management. KPIs also define source data that must be used to compute their value. Usual way to manage performance is to set target value for KPIs and then implement changes to meet these values.

People capture basic stakeholders with a concern. When describing people aspect, we must identify people in following roles. Owner of the performance information that is also responsible to other roles. Other roles are producer of information (someone who creates information for the owner), consumer of information (someone who accesses information and use it), manager of information (manages the information for the owner). There can also be other roles defined by BIPMS. For BI Service, owner of performance information on tactical level is the owner of BI Service in Business Informatics.

Processes describe procedure, how the performance information is created and used. In our case, process responsible for evaluation of the BI Service would be Service Portfolio Management and there should be sub-process or activity with a direct linkage to BI Service portfolio measurement and management.

Tools describe how the task is supported and what tools were used.

We will create simple table to put all the information on one place, see Table 1. We provide example to illustrate population of BIPMM artifact for demonstration purposes. We could call this artifact type “Performance information need description”. There can also be other artifact types that could describe BIPMS in more detail way or with the usage of organization specific tools. Artifacts could also be customized with organization relevant attributes but general areas of BIPMM and BIPMS should always be included.

**Tab. 1. Example of BIPMM artifact describing performance information needs for BI Service and how they are covered.**

<table>
<thead>
<tr>
<th>ID</th>
<th>PMA01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Informatics area</td>
<td>Services</td>
</tr>
<tr>
<td>Level of management</td>
<td>Tactical</td>
</tr>
<tr>
<td>Goal, Requirements</td>
<td></td>
</tr>
<tr>
<td>• Does BI Service provide value for its users?</td>
<td></td>
</tr>
<tr>
<td>• Is BI Service used effectively to support business activities?</td>
<td></td>
</tr>
<tr>
<td>• Is BI Service usage growing or fading?</td>
<td></td>
</tr>
<tr>
<td>Strategy, Methodology</td>
<td></td>
</tr>
<tr>
<td>Service Portfolio Management process with the use of ITSM support</td>
<td></td>
</tr>
</tbody>
</table>
### People

- **Owner**: Service Portfolio Manager  
- **Manager**: BI Service Manager  
- **Producers**: BI Service Users, BI Service Operation staff  
- **Consumers**: Service Portfolio Manager, BI Service Customers

### Processes

- **Usage**: Service Portfolio Management process, evaluation of services  
- **Operation**: Service Operation of ITSM warehouse

<table>
<thead>
<tr>
<th>Tools and Technology</th>
<th>Data and Information</th>
</tr>
</thead>
</table>
| - Questionnaire implemented on ITSM platform as a quarterly filled out form  
- Data extracted from source system and loaded to ITSM data warehouse  
- Report created with values of defined KPIs | - BI satisfaction level (questionnaire)  
- BI Service number of change requests for change and for new functionality (Service Desk)  
- Number of BI Service users total and new (BI Service user list)  
- Number of BI Service outputs total and new (BI Service output catalogue)  
- Number of BI Service outputs actively used total (BI Service access log)  
- Number of BI Service output consumed per user and day (BI Service access log) |

In real world, there would be many BIPMM artifacts describing different requirements and how they are fulfilled in BIPMS. Key to manage whole BIPMS is categorization of BIPMM artifacts with related area of Business Informatics and level of management. One description can also describe performance across more than one Business Informatics area.

There can be many artifact types describing BIPMM. Different artifact types could range from text documents through structured spreadsheets to specialized applications for description of BIPMS.

Further work can be done in many areas, e.g. BIPMM lifecycle and its processes, viewpoint specification with stakeholders and their concerns, formalization of BIPMS and BIPMM according to ISO42010, creation of BIPMM instance stubs compliant with ITIL or COBIT frameworks, creating examples of other BIPMM artifacts and others as well.

### 4. Conclusions

Our structured approach for description of Business Informatics performance measurement and management needs should help organizations with clear statement how they want to implement BIPMS in their environment. We propose using BIPMM instance as a basis for description of BIPMS in context of organization.

Proposed solution is not defining Business Informatics performance measurement and management as a standalone discipline or separate organization process. It is based on description of the needs, concern, stakeholder, process, tool and information in integrated and easily understandable way. This can be achieved with the usage of BIPMM and it can provide management of Business Informatics a tool how to describe performance measurement and management in a consistent and structured way.

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References


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