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Business Process Modelling in Middleware Application Development

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Abstract – Business Process Modelling (BPM) is a management discipline aimed at describing and managing the business processes in an organization Development. The goal of Business Process Modelling is to achieve the organization's objectives by aligning the business processes with these objectives and to continually improve these Middleware Development processes. This study proposes an evaluation method for Business Process Modelling. This method will be developing by creating a framework on Business Process Modelling by analyzing the state of the literature regarding Business Process Modelling. This framework contains literature and criteria that have been extracted from this literature. The evaluation method itself consists of a selection of the framework's criteria, a case, information on how to use the criteria when evaluating the BPM products and a rating method which allows quantification of the evaluation. Most organisations are working hard to improve their performance and to achieve competitive advantage over their rivals. They may accomplish these ambitions through carrying out their business processes more effectively. Hence it is important to consider such processes and look for ways in which they can be improved.

Keywords: Business, Process, Modelling, Middleware, Application, Development, BPM, Management, Organization, Goal, Achieve, Improve, Method, Evaluation, Framework, Information, Working, Performance, Achieve, Effectively, etc.

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INTRODUCTION

Business Process Modelling (BPM) are sets of tools to support the Business Process Middleware Application Development life-cycle. A list of key advantages in using a modern BPMS: it bridges heterogeneous application environments, includes human activity by incorporating workflow, allows web service orchestration, provides the opportunity to customize the whole process for specific customers and partners, offers an integrated user interface through a single portal and back-end integration, and monitors process instances. Rather than introducing new technology or replacing existing business applications, BPMS integrate existing technologies and existing applications in a process-oriented fashion. Based on this notion of BPMS, Smith and Finger describe requirements for a BPMS as follows: a BPMS should be able to support modeling, deploying, and monitoring business processes, as well as to support integration of heterogeneous processes, automation, and collaboration. Business process design includes process documentation with a process notation, such as Event driven Process Chain (EPC) notation and Business Process Modeling Notation (BPMN). Configuration includes the transformation from process models into formal languages such as the Business Process Execution Language (BPEL). Integration facilitates better reuse of existing applications. Business Process Modelling allows easy deployment of configured process Middleware Application models, and to execute them.

REVIEW OF LITERATURE:

Nowadays, most organisations are facing challenging competition from other organisations and are influenced by constant changes in the surrounding environment. These may take different forms such as an increasingly dynamic economy, altered customer requirements, global competition, new technologies and the emergence of the Internet and electronic commerce. Therefore, organisations are looking for some means to help them face these Middleware challenges and to maintain their positions and percentage shares in the Development market. They are also looking to achieve a competitive advantage. To accomplish these, it is important for the organisations to manage and analyse their business processes modelling and their structures so as to identify their critical success Middleware Application

Development factors and to improve such factors while eliminating their deficiencies.

Business Process Management: Business Process Management (BPM) is the result of the convergence of many trends, among which is business process modelling, quality management, change management, distributed computing, workflow management and business reengineering (Sun *et. al.,* 2008). "Business Process Management (BPM) is a systematic, structured approach to analyze, improve, control, and manage processes with the aim of improving the quality of products and services." We have compared our definition with the definition put forward by (Zisman et. al., 2007). This definition of BPM is very limited and does not mention that BPM is a systematic and structured approach, that it uses methods and techniques, involves different information sources and aligns the processes with the organization's objectives. When comparing our definition to the three mentioned above, we can conclude that none of these definitions mentions that BPM is not a technical method, but a management discipline and that it tries to reach organization's objectives by aligning the business processes with the organizational objectives. We argue that these two points are essential in the definition of BPM.

Importance of Business Process Management: Factors like globalization, the opportunities of e-businesses, deregulation and political instability lead to a turbulent market in which an organization has to constantly adapt. If an organization does not change and adapt to its environment, it faces the risk of being put out of the market (Castellanos, Casati, et al., 2005). Therefore organizational change is important for an organization's survival. Traditionally, a distinction is made between revolutionary and evolutionary change. The former is a radical type of change which takes place in a relatively short period of time and is facilitated by people high in the hierarchy of the organisation. Business Process Reengineering projects are examples of this type of change. The latter type of change is more gradual. With this type of change, small steps in a long period are taken by people closer to the operational level. A good example of this type of change is Total Quality Management. Business Process Management (BPM) is a method that facilitates both types of organizational change (Cordys, 2008). It gives organizations the opportunity to manage (and thus change) their business processes, by making the business processes explicit and flexible, as opposed to the fixed process logic supported in most information systems. Moreover, it gives the organization the opportunity to change their business processes from a business expert's process viewpoint rather than from a technical viewpoint. It also allows organizations to align their business processes more directly with their organizational objectives. Among organizations there is also a clear demand to be able to change their business processes, making Business Process Management a relevant topic in research literature.

Explicit Process Management: Our definition states that Business Process Management supports explicit process management. This means that the business processes have to be made explicit. Implicit business processes are embedded in the working patterns of employees and in the application logic of applications. Making a business process explicit implies that a business process model has to be produced in which the business processes are precisely defined.

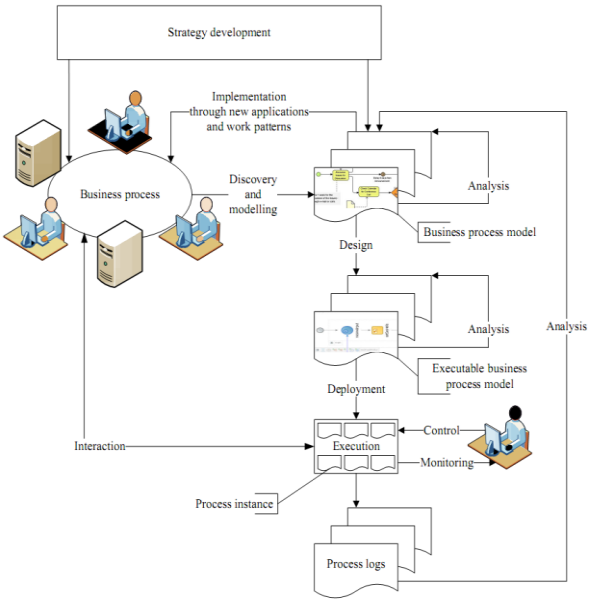

Figure 1 – BPM lifecycle

The steps mentioned above can be captured in a BPM lifecycle, which is presented in Figure 1. This figure does not show the option of outsourcing (part of) the business processes. Analysis is represented as a loop, which indicates that after the analysis the model is modified based on the results of the analysis.

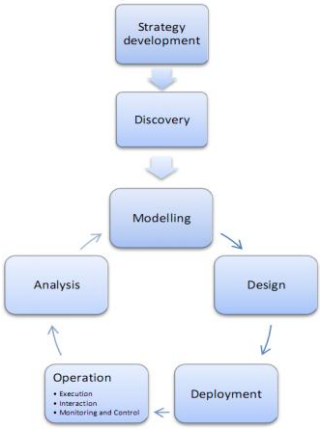

Figure 2 – BPM lifecycle in other notation

To justify our BPM lifecycle, we have compared it to the process management lifecycle by (Hill, Cantara, et al., 2009. Bravetti and Zavattaro, 2007. Ciccaresea *et. al.,* 2005) and the process lifecycle by (Dijkman *et. al.,* 2008). The former lifecycle can be found in Figure 3, the latter in Figure 4. For the sake of comparison, we have provided our own model in the same notation as the other two, in Figure 2.

All steps from the lifecycle by (Aalst et. al., 2010), shown in Figure 3, can be found in our lifecycle:

- **Process strategy:** strategy development in our lifecycle.
- **Process documentation:** we have split the process documentation into discovery (finding out which business processes are available) and modelling (the production of a business process model) in our lifecycle.
- **Process optimization:** the analysis cycle at the business process model in our lifecycle indicates that by analyzing the business process model, room for improvement can be found and is the input for improvement of the business process model.
- **Process implementation:** this can be either unrelated to IT, in which case it is modelled by the arrow from the business process model back to the business process, or IT-related, in which case the design arrow is followed.
- **Process execution:** we have split their process execution into the execution by the business process execution engine (execution) and the interaction between the users and the execution engine (the interaction arrow).
- **Process controlling:** we have added monitoring to the controlling phase

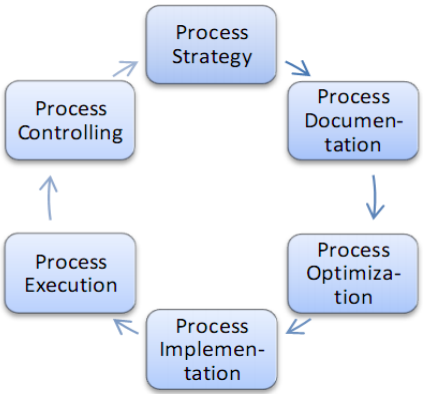

Figure 3 – Process management lifecycle

We have also included some extra steps in the BPM lifecycle compared to (BEA, 2008). These are deployment (rolling out the executable business process to the infrastructure), analysis of the executable business process model and analysis of process logs.

CONCLUSION:

The existing body of research shows that business process modelling in Middleware application Development is indeed very significant for organisations. Business Process modelling assists organisations in gaining benefits through process documentation, communications, execution, and automation, among others. The majority of the research studying end-user perspectives has focused on guidelines for using a particular modelling tool, methods, frameworks, and examining those influences related to modelers' behaviours, decisions, or modelling grammars. The interaction of individuals with business processes is an important field of study that can assist organisations in determining the adequate methods of interacting with process models, the issues that are related to the application of process models, how to best address those issues, and how to find opportunities to achieve potential process improvement. It also revealed the involved employees' opinions about the perceived value and benefits of process modelling. The identified key benefits of process modelling were process understanding, process improvement, process communication, and process analysis. This report furthermore discussed the employment of business process modelling in day-today operations and found evidence for a lack of business process modelling use in Middleware Application Development.

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