*An Applied Method for Selecting a Business Process Management Tool in Enterprise Software Project

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Abstract. Business Process Management (BPM) tool, which will be used in the management, improvement and maintenance of business processes, continues to increase its importance in the enterprise software projects where business processes are involved. In enterprise software projects, many criteria are in the foreground in the selection of BPM tool. These criteria are shaped by the requirements and the technical architecture of the enterprise software project. In this study, BPM selection criteria were determined for the enterprise software project and a method was proposed considering these criteria. In order to make BPM selection correctly, the scoring method was used for criteria. Among the criteria, the criteria related to usability also played an important role. At the end of the study, the lessons learned while selecting the BPM tool were included.

Keywords: Business Process Management, Business Process Management Tool, Usability, Enterprise Software Project

1   Introduction

Enterprise software projects often involve processes. One of the existing BPM tools can be selected and used to manage, develop and maintain these processes. Many BPM tools can be found in the market. Some criteria that should be considered for BPM tool selection to meet the needs of the institutions can be proposed as availability, features meeting the requirements of enterprises, performance, cost, etc. Moreover, usability is substantial criterion for the institutions. It is therefore often a challenging task to find the right business process tool that meets the specific needs of a company.

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2 Definition of Used Terms

2.1 Business Process Management

In this section, firstly, the "process" definition will be explained and then "business process management" (BPM) and BPM tool definitions will be stated.

"In the systems engineering arena, a process is a sequence of events that uses inputs to produce outputs. From a business perspective, a process is a coordinated and standardized flow of activities performed by people or machines, which can traverse functional or departmental boundaries to achieve a business objective that creates a value for internal or external customer" says Chang [1].

Aalst remarks that "Business Process Management (BPM) is the discipline that combines knowledge from information technology and knowledge from management sciences and applies this to operational business processes" [2].

Maria implies that: "BPM tool is a piece of software, which provides the user with a possibility to create, store, share and analyses business process models" [3] Effinger, Seiz and Jogsch suggest that "Companies today use business process management (BPM) to define, design, document and improve business processes."

2.2 Enterprise Software

"Enterprise applications are about the display, manipulation, and storage of large amounts of often complex data and the support or automation of business processes with that data" explains Martin Fowler [4]

Wikipedia defines that: "Enterprise software, also known as enterprise application software (EAS), is computer software used to satisfy the needs of an organization rather than individual users. Such organizations would include businesses, schools, interest-based user groups, clubs, charities, or governments" [5]

Microsoft says that "An enterprise application is a business application, obviously. As most people use the term, it is a big business application. In today's corporate environment, enterprise applications are complex, scalable, distributed, component-based, and mission-critical" [6]

2.3 Proof of Concept (POC)

"Proof of Concept (PoC) is a realization of a certain method or idea in order to demonstrate its feasibility" [7]. In this POC study; firstly simple scenarios implemented and then selecting a scenario similar to the actual scenario applied.

2.4   Usability

According to the ISO/IEC standard usability is: "The capability of the software product
to be understood, learned, used and attractive to the user, when used under specified
conditions." (ISO/IEC 9126- 1, 2000).

The criteria related to usability are realized as important for selecting BPM tool.

3   Requirement and Problem Definition

The requirement is needing a BPM tool to manage processes in enterprise software
project. And the problem is how to choose the appropriate BPM tool in the enterprise
software project. Choosing the most suitable business process management tool is a
challenging task.

Which ways can be followed to make a selection? Is there a method that is experi-
enced in a real enterprise software project? Can some scenarios in the enterprise soft-
ware project be implemented? What is the importance of usability for the criteria? The
answers of these questions can help the solution of the problem.

4   Deciding on Mandatory and Expected Criteria

First of all; Mandatory criteria should be decided for selecting a BPM tool.
Mandatory criteria are your necessary criteria. For instance; "A BPM tool's licence cost
should be at most 20.000€." Candidate BPM tools should meet these mandatory crite-
ria. That's why; if BPM tool does not meet the necessary criteria, it will be eliminated
automatically.

Next, expected criteria about the BPM tool should be decided for selecting BPM tool
Features that expected from a BPM tool, vendor maturity, community support etc. can
be your expected criteria. These expected criteria will be used for evaluation of BPM
tool.

5 The Method Used for Selecting BPM Tool

Many methods can be found for selecting BPM tool. But following method is applied to real enterprise software project with successfully. The applied method is depicted at Fig. 1. And each step explained at the below.
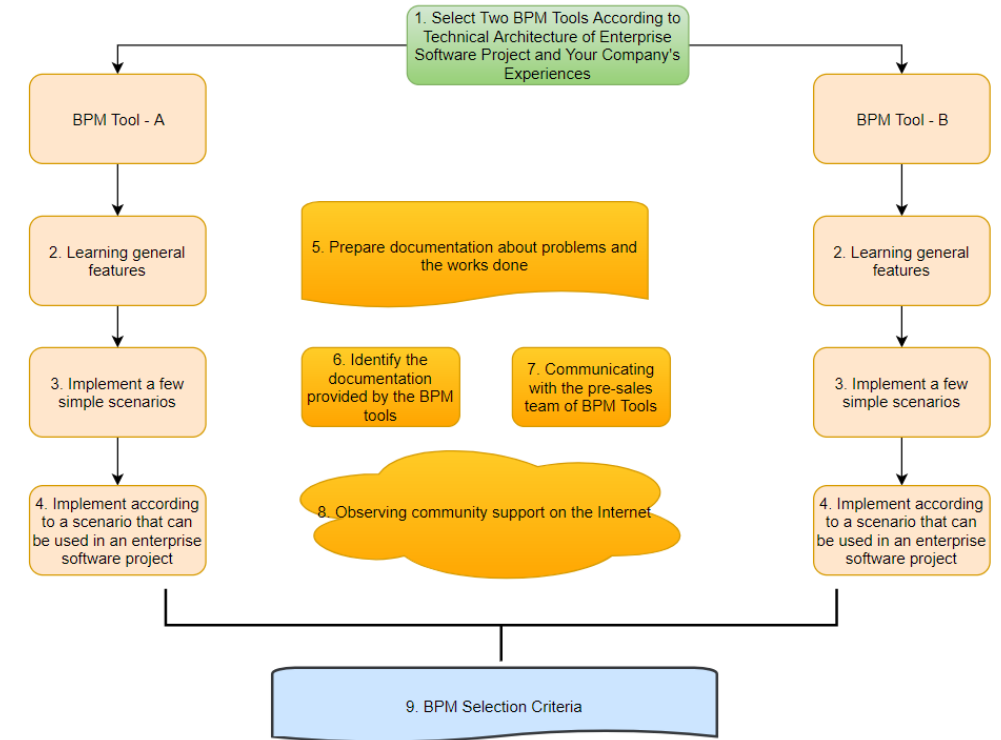
Fig. 1. BPM Selection Method

5.1 Selecting Two BPM Tools According to Technical Architecture of Enterprise Software Project and Your Company's Architecture

Considering time and cost, it is impossible to examine all BPM tools. Therefore, two BPM tools which are suitable for technical architecture of enterprise software project and your company's experienced in BPM tool can be selected. Of course, it is better to select more than two tools for comparison. However, it depends on your time and cost. These two tools should be chosen to meet the mandatory criteria of the enterprise software project.

The negative aspect of selecting two BPM tools for comparing is the possibility of overlooking more appropriate one out of these tools. After selecting two BPM tools as a candidate; following steps should be applied for both BPM tools.

5.2 Learning the General Features of BPM Tool

It can be started by setting up selected BPM tool, learning its architecture, and general capabilities it provides. The following methods can be applied for this:

- Quick overview on the official site of BPM tool can be made.
- Beginner level videos related to BPM tool can be watched.
- It might be a good idea to look if any review related to BPM tool is found on a search engine or not.
- It might be a good idea to read a review related to BPM tool found on a search engine.

5.3 Implement a Few Scenarios

To use the BPM tool more effectively, simple scenarios can be implemented. This simple scenario may be a process involving several roles, or it may be a simple scenario in the enterprise software project.

5.4 Implement According to a Scenario that Can be Used in an Enterprise Software Project

A complex process to takes place in the enterprise software project can be implemented. In this scenario, different features such as using different activities, user management, and notification settings can also be tested.

5.5 Preparing Documentation about Problems and the Works Done

Works using the BPM tool should be documented after each work is done, without waiting for all works to be completed. This documentation will facilitate communication within the team. And it helps using the selected BPM tool at a certain level, while real scenarios is going to be made in the future.

5.6 Identifying the Documentation Provided by the BPM Tools

In general, you can look at BPM tool documentation provided by the vendor. Moreover, it might be good idea to look at the extent to which the advanced topics supported by BPM are provided.

5.7 Communicating with the Pre-Sales Team of BPM Tools

Various scenarios and problems encountered can be discussed with the pre-sales technical team of BPM tool. Furthermore, additional information about BPM tool can be taken from the pre-sales team. In this way, it is possible to get an idea of the support given by BPM tool team for both fast and after sale.

5.8 Observing community support on the Internet

When working with the BPM tool, especially following emerging problems, solutions of a problem can be searched on the internet (forums, blogs etc.). In this way, community support on the internet is tested and controlled.

5.9 BPM Selection Criteria

All of above items will help to score BPM Selection Criteria more efficiently. For example; if one of expected criterion of BPM is "Supporting various technologies (database, LDAP, Active Directory, RESTful Service, etc).", it can be easy to give more accurate score after applied all of above items.

6 Formula for Selecting BPM Tool

After the method is applied, the selection score of the two BPM tools are made by following formula.

$$fscore = \prod_{i=1}^{X} m_i * \sum_{j=1}^{Y} (c_j * w_j)$$

— **f(x):** is the score of the BPM tool. BPM tool with high score is selected.
— **X:** is a number of mandatory criteria.
— **Y:** is a number of bpm tool's expected criteria.
— **m:** is a value of mandatory criterion. It can be 0 or 1.
— **c:** is a value of bpm tool's expected criterion. It can be between 0 to 10.
— **w:** is a weight in enterprise software project, importance level. It can be between 0 to 10.

7 Results Achieved

The suitable BPM tool was selected successfully for the enterprise software project with the method that I followed. On the other hand, the enterprise software project, which uses selected BPM tool, is ongoing. Related to enterprise software project, both simple and complex scenarios were tested in BPM tool selection process.

4 mandatory and 10 expected criteria used in the selection of BPM tool. BPM Tool A and BPM Tool B, which fulfil mandatory criteria, were evaluated according to the method given. BPM Tool C and BPM Tool D, were eliminated initially because of not satisfying mandatory criteria.

Criteria in relation with usability were found important in this choice as well and explained with details at the next section.

The recommended method lasted approximately 3 months.

8 Criteria in Related with Usability and BPM Tool Usability Studies in the Literature

The following criteria can be viewed as criteria for usability among ten criteria which are selected as BPM tool selection criteria for the enterprise software project.

- Supporting various technologies. (database, LDAP, Active Directory, RESTful Service, etc.)
    - Compatibility with database to be used in enterprise software project
    - Support systems for user management.
    - SOAP and RESTful service support by BPM tool
- Obtaining support from the vendor (before and after sale)
- Solution and support for problems from community support on the internet
- Usage of the business rule engine.
- Ease of application development in BPM tool.
- Having enough documentation about the BPM tool.

The comparison of BPM tool usability studies in the literature and usability in this study is given in the following table.

Literature BPM Tool Usability	Usability In this Study
"The technical support of the process of process modelling is important for the quality and the applicability of the resulting models. The quality of that technical support plays an important role in the selection of corresponding software products and is a crucial characteristic of differentiation." [8].	Technical support was found to be important as vendor support, support for many technologies, and ease of use of software are taken into consideration.
"Considering that the target user group of BPM tools is shifting from modelling experts to domain experts from the departments without specific IT knowledge" [9].	The software's web-based criterion takes into account the ease of use of business users with the availability of the BPM tool without the need for an IDE installation.

The study was carried out in a scenario consisting of five different tasks in BPM. After this scenario, information has been obtained from the user in terms of usability [10]	Simple and complex scenarios were tested and the criteria for selecting the BPM tool were evaluated.
One of the BPM tool selection criteria is "user interface and usability of the BPM tool" [11]	The criteria related to usability are found to be important in selecting BPM tool with the applied method.

9   Conclusion

Finding the BPM solution that fits your needs best in the enterprise software project is a challenging task. In this study, you can see an applied and proven method for selecting BPM tool in the enterprise software project.

Since it is impossible to investigate all the BPM tools in terms of time and cost, several tools can be selected bearing in mind which tool is the most appropriate for the technical architecture of the enterprise software project and company's experiences. In this study two BPM tools are investigated at final. In addition, two BPM tools were initially eliminated they did not meet the required criteria.

When making the selection of BPM tool, the POC (proof of concept) work is very useful. In this POC, firstly implementing simple scenarios and then selecting a scenario similar to the actual scenario can be applied.

Finally; it is very useful to communicate with the technical pre-sales team of BPM tool vendor to discuss the POC works and some problems and solutions.

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