Smart Business Process Management: An Introduction

Sidhya B Dash

Abstract--- Processes have become an important asset in organizations for daily life over the past decade because an organization's sufficient Business Process Management (BPM) (e.g. software development firms) will help achieve organizational goals. In particular, it is important to control these processes effectively, which are essential for organizational success, in order to continually improve, while increasing productivity and profitability within the enterprise (e.g. software processes in software companies). This process is related to the lifecycle of the project and currently there are many tools (Business Process Management Suites, BPMS) for managing this lifecycle. Although, not all BPMSs provide complete support for this lifecycle, this makes choosing the right BPMS more difficult (depending on the organization's needs). This paper presents principles of smart business process management and serves as an editorial for the particular issue in question. Author presents a structure that defines three types of business process management: multi-process management, process model management, and management of process instances.

Keywords--- Analysis, Business Process Management, Open Source, Quality Model.

I. INTRODUCTION

BPM (Business Process Management) is a management field that can be described as a methodology that includes processes, procedures and tools to support functional business process design, execution, management and analysis[1]. BPM seeks to strategically analyze the processes undertaken by a corporation and to constantly improve the efficiency and efficacy of Business Processes (BP) within companies with the goal of: (i) achieving lower prices; (ii) improving quality; and (iii) increasing productivity and profitability in relation to other companies in the same market area. Currently, BPM as a systematic process of improvement is a common practice followed by a massive number of companies in all business areas. In addition, companies are informed about the need to implement well-defined processes, trying not only to increase their level of maturity, but also to improve the way their goods are produced and handled, and hence their quality[2]. Actually, there are a huge variety of tools available (named Business Process Management Suites, BPMS) that allow BP lifecycle management to make BPM implementation easier in business environments. Each of these BPMS however has a wide range of prices and features. Management of business processes is obsessed with all the business process management activities. In past, business process management operations have been carried out by process analysts, process managers and process engineers in a labor-intensive manner with little automated assistance except for creating system configuration from the executable process model[3].

Department of Management, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, sidhyabratdash@soa.ac.in

This has improved during the last few years. Different smart strategies have been established to simplify or smartly help process stakeholders at different stages of business process management. This particular issue offers ten excellent examples of recent advances in smart business process management. This review frames them in an overarching context and links them with the wider spectrum of recent approaches to smart management of business process[4].

Process Management refers to aligning processes with an organization's strategic goals, designing and implementing process architectures, establishing process measurement systems that align with organizational goals, and educating and organizing managers so that they will manage processes effectively.

Examples of business processes include receiving orders, invoicing, shipping products, updating employee information, or setting a marketing budget. Business processes occur at all levels of an organization's activities and include events that the customer sees and events that are invisible to the customer. Let's review. There are four functions of management that span across all industries. They include: planning, organizing, leading, and controlling. You should think about the four functions as a process, where each step builds on the others.

II. BUSINESS PROCESS MANAGEMENT

Author distinguishing three different levels of business process management in this segment. Fig. 1 presents the three levels and their interconnections. Multi-process management is often referred to as top level. It concerns detection of an organization's major processes and the regular assessment of the priorities assigned to those processes[5]. These actions intertwine with strategic management questions and the overall organization of the process. Multi-process management solutions are often housed in a central repository of the processes. This repository's computational framework is also called process architecture. The middle level is about running a single operation. Management operations at this stage are often called the lifecycle of the BPM. Once a process is chosen for overhaul this lifecycle is begun.
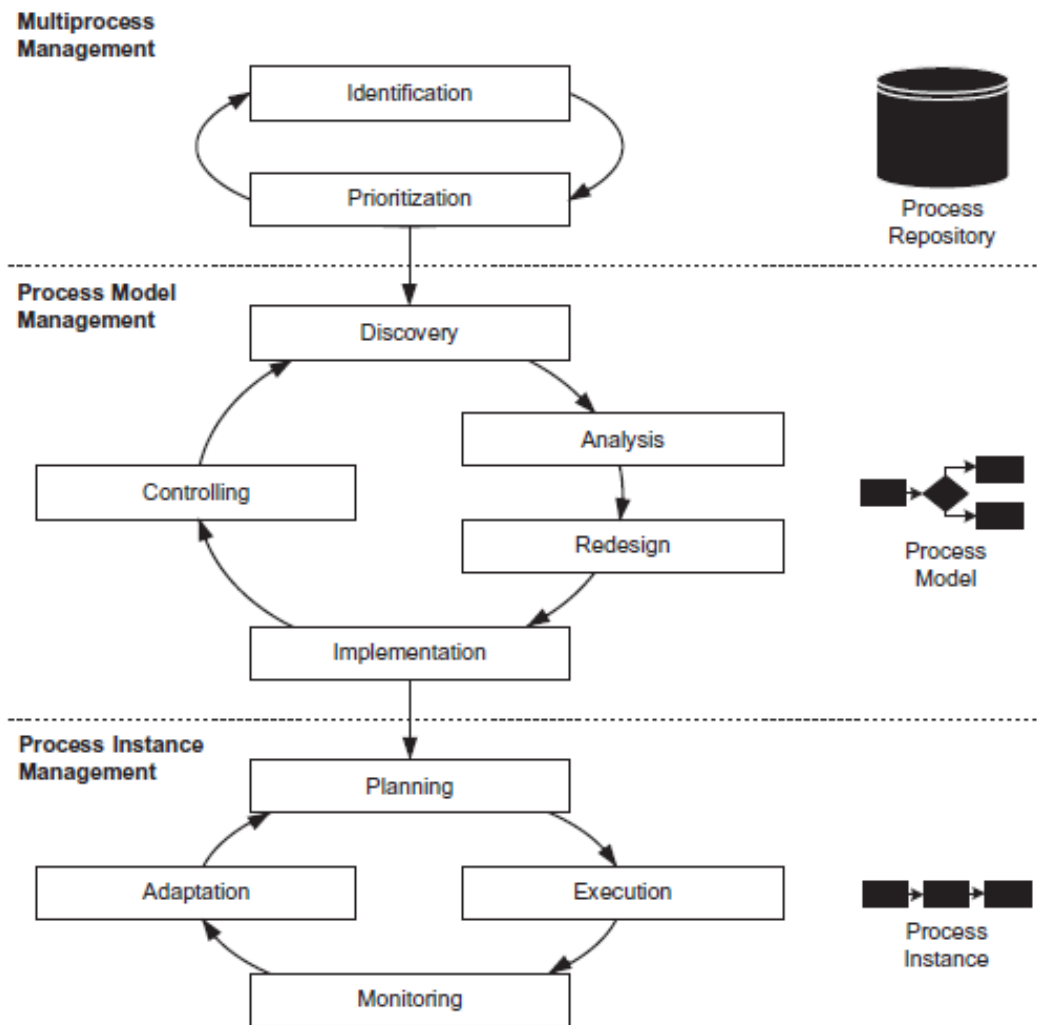
Fig. 1: Levels of Business Process Management

Firstly, in the discovery phase this process is recorded resulting in an as-is process model. Additionally, the mechanism is analyzed using methods of qualitative and quantitative analysis. Weaknesses and issues can be exposed in this way. Third various redesign approaches are explored to fix the problems and generally improve process efficiency. It produces a to-be process design as a description of how the process is planned for future operation. Fourth, this to-be procedure model is taken into implementation[6]. The resulting information systems are designed or reconfigured, and workers are expected to operate under the new system. Fifth, when the process is executed in accordance with the new design for a period of time, process controlling checks to which degree performance and goals of accordance are met. It is possible to use process mining to gain information about how the process works. The bottom-level emphasis is on handling single method instances. Specific cases may be coordinated as to when their operations are scheduled and what resources should be involved. Process operations are performed according to the rules specified in the process model, with or without such a schedule. Continuous process control tests guidelines such as statements regarding quality of service and triggers warnings if inappropriate activity is detected. Such warning could be the reason to change the execution course for an individual instance of the operation. Process mining research

has developed in various automated analytical techniques which support various business process management activities. They refer to these as smart management of business processes.

III. SMART BUSINESS PROCESS MANAGEMENT

The Dictionary offers the following three meanings for smart: (i) being clean and tidy, (ii) showing fast-witted intellect and (iii) being quick. All these definitions together have been influential characteristics of information systems and analytical techniques in various application domains called smart home, smart health, smart environment, smart energy or smart mobility. What such advanced systems have in general is that they integrate sensors, actuators, networking and analytics. What they encourage is preemptive action and preparation based on evidence, historical data, state details and smart algorithms. Because management of business processes is primarily concerned with coordinated action, efforts have been made to generalize the commonalities of these smart application scenarios in terms of their complex adaptation and continuous learning through smart business process management. This section gives an overview of the different techniques related to smart business process management. This paper also explain how this particular issue's contributions contribute to the broader scope of research in this field.

III.I.   Smart multi-process management:

Previous research on smart multi-process management focused mainly on promoting the management of repositories. This stream of research has been caused by work on similarities between business process models and automatic matching techniques. This provided the basis for various automated refactoring strategies involving terminology harmonization, automatic service derivation, semantic search, or combining business process model operations. A particular issue expands a research source with innovative perspectives on similar process models. Experts contribute to the success of automated process-model matching techniques. They contribute to the efficacy of automatic process model matching techniques[7]. In their self-configuring OPBOT matcher, they explore the value of control flow knowledge for the matching problem and combine a creative order relationship score with a bag-of-word approach.

III.II.   Smart process model management:

Research on smart process model management has a wide repertoire. In the survey papers are listed several problems and solutions like. During the discovery phase, various techniques have been introduced to help the method modeling process directly, this is a recent example. Pattern detection is used for identifying potential weaknesses during the research process. The process of redesign is often assisted by heuristics like those summed up in. New innovations such as crowdsourcing also hold the potential that can be used here. Workflow management technology is generally behind the implementation process. Recent extensions include smart support for automated composition of the service and configuring the operation. The extraction of intelligent information from process-related data is often called process mining. Process mining contributions help to efficiently discover models from information, test the conformance between model and execution, and extract knowledge about the probabilities of decision and period of execution. These information partly informs the control step in which the process is assessed according to its goals of efficiency and

conformance[8]. This particular issue complements these different study sources in the following ways. Researchers are studying techniques that help model business processes in a well-organized manner. An automated modeling strategy selection and a training tool support their Structured Process Modeling Method (SPMM). In a controlled experiment with 149 Master students, the benefits of the method are demonstrated.

III.III. Smart process instance management:

Earlier research explores various aspects of process instances management. The preparation process is called in different planning, elasticity, and semantic development functions. Usually, process execution is carried out using state and transition principles. Recent research is exploring the representation of these ideas with the aid of distributed ledger technology in block-chain. Tracking is a significant concern to ensure that efficiency and conformance remain within planned ranges. Research on AB-BPM is inspired by AB research and incorporates it in a self-regulating manner with process automation. Adaptation is a crucial mechanism for dealing with unforeseen situations. Different studies define strategies to help achieve versatility at run time. This special issue expands this research stream with an approach that helps predict a process instance's behavior which can inform planning and preparation of processes.

IV. TECHNOLOGY IN A BPM PERSPECTIVE

Technology from a BPM viewpoint concerns crucial importance that technology plays in value creation and underpins BPM's philosophy by offering an interface that drives work across the business, allowing for a tracking, optimization and traceability regime. It allows companies to plan various scenarios and make the right immediate changes; more efficiently and thereby add competitive advantages. The technology also offers the infrastructure needed to turn strategic choices into concrete action plans and make companies more proactive. BPM's goal is to raise the value of employees and customers through creative, scalable and productive processes, but in such process-managed organizations business transformation is more about than technology. Simply seeing BPM as a mark for new technology is neither a misconception nor an improved BPR version[9]. Reluctant action when talking about BPM is not surprising, although BPM, like BPR, emphasizes process thinking as a tool for lowering costs, enhancing service quality and increasing personal productivity. BPM and Business Process Reengineering (BPR) are very similar, but the main difference is that BPM is described as a methodology for continuous improvement of performance while BPR is not iterative. Both have innovation as an enabler, but BPM technology also obstructed process improvement at the time of the 1980's. In addition, the technology behind the systems required specialized skills and considerable time to modify, and last but not least, it was proprietary autonomous of each other's implementations before the ability to automate the entire process appeared.

V. FUTURE RESEARCH ON SMART BUSINESS PROCESS MANAGEMENT

The study reported in this particular issue provides a solid basis for future research into smart management of business processes. This work will have to address problems inside and across the three layers of business process

management. Within levels there is scope for future research. On the level of the process repository, it is interesting to note that work has come to a pause on the integration of repositories with external information tools. There are numerous opportunities, at the level of singular models, to combine existing analytics and redesign techniques with information created from sensory data[10]. For example, the potential of process innovation based on RFID technology in the retail sector is illustrated in as much as in the logistics sector centered on AIS transponder data in. Social media has been addressed extensively with an emphasis on product innovation but there is also the ability to exploit it more intensively for process innovation, for example in the public sector. There are also numerous ways to use available sensor data to handle process instances in a smarter way. However, several smart initiatives, such as home automation, smart education, smart city, smart energy or smart mobility, have an intrinsic developmental perspective that is aligned with the coordination difficulties of business process management. New technology continues to evolve, and ideas and algorithms are developed to work with data related to the process. These will shape the way business processes will be handled in a better way in the future.

VI. CONCLUSION

BPM is a consolidated strategy for lowering costs and improving BP in many organizations (through a cycle of continuous improvement). A proper management of business processes can lead to achieving the organizational goals. In this way, organizations should implement their BP with mature tool-based management models to maintain and/or attain an edge over their competitors. The overall conclusion is that BPM has a poor academic base and is a technically focused term. BPM is a systematic method of management that uses technology to regulate and run the entire business through laws that clearly define business processes. BPM is clearly a relevant practical challenge, and more research is needed. Future research should however make an effort to bridge existing BPM research.

REFERENCES

[1]   F. Rahimi, C. Møller, and L. Hvam, "Business process management and IT management: The missing integration," Int. J. Inf. Manage., 2016, doi: 10.1016/j.ijinfomgt.2015.10.004.

[2]   OMG (Object Management Group), "BPMN Specification - Business Process Model and Notation," Bpmn.Org Website. 2015.

[3]   J. Mendling et al., "Blockchains for business process management - Challenges and opportunities," ACM Trans. Manag. Inf. Syst., 2018, doi: 10.1145/3183367.

[4]   P. C. Jorgensen, "Business Process Modeling and Notation," in The Craft of Model-Based Testing, 2017.

[5]   J. Mendling, B. Baesens, A. Bernstein, and M. Fellmann, "Challenges of smart business process management: An introduction to the special issue," Decision Support Systems. 2017, doi: 10.1016/j.dss.2017.06.009.

[6]   J. Becker, M. Rosemann, M. Röglinger, and M. Zur Muehlen, "Business Process Management: An introduction to the special focus issue," Business and Information Systems Engineering, vol. 4, no. 5. pp. 227–228, 2012, doi: 10.1007/s12599-012-0228-2.

[7]   H. H. Arndt, "Process control," in Project Management: A Reference for Professionals, 2017.

[8]   P. Trkman, W. Mertens, S. Viaene, and P. Gemmel, "From business process management to customer process management," Bus. Process Manag. J., 2015, do 01.

[10] H. Maylor, K. Blackmon, and M. Huemann, Researching Business and Management. 2017. i: 10.1108/BPMJ-02-2014-0010.

[9]   O. AlShathry, "Business process management: a maturity assessment of Saudi Arabian organizations," Bus. Process Manag. J., 2016, doi: 10.1108/BPMJ-07-2015-01.