Real-Time Monitoring and Analyzing Business Process Performance

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Abstract: *BAM is the key element for the real-time achieves management aligned with business strategies. Proposed in this paper are a BAM design framework for the real-time business performance management and an implementation of BAM system prototype to show the applicability of proposed framework. The objectives of business activity monitoring to give real time information about the status and results of many operations, processes, and transactions. yeK benefits of BAM are to enable an enterprise to get better informed business decisions, quickly processing problem areas, and re-position Institutions and Organizations to take full advantage of growing opportunities.*
Index Terms: *BAM, Real Time, Performance, Monitoring, KPI, business process.*

I.   Introduction

There are many information systems in the organization like ERP and BPM. It is important to measure and monitor the performance of these systems immediately to ensure from high quality of the performance and no any delay especially for large systems that has huge information. Business activity monitoring (BAM) is software that aids in monitoring of business activities, where these activities are implemented in computer systems. Using BAM, companies are able to monitor their business processes, specify failures or exceptions, and processing them in real-time. In addition, since BAM tracks process executions and recognize when they succeed or unsuccessful, it builds up valuable records of behavior which could lead to overall process improvement, while also providing a useful tool to manage compatibility, assure business transactions, and reduce risk [7].

The term was drafted by analysts at Gartner, Inc. [12] [13] and refers to gathering, analysis, and presentation of real-time information for activities inside organizations to engaging customers and partners. A business activity can either be a business process that is organized by business process management (BPM) software, or a business process is a sequence of activities which include multiple systems and applications. BAM is an enterprise solution aiming to provide a real-time summary of business activities to operations managers and upper management [12].

II.   Business Activity Monitoring (Bam)

Provide real-time access to important business Performance indicators order to improve the speed and effectiveness of business operations [1] [8]. The BAM aimed to provide real-time information about the status and results of various business operations, processes, and transactions. BAM reduce the delays, bottlenecks and inefficient use of labor and materials, while providing real-time financial and performance data [2] [10]. BAM allows a business to monitor its business processes, and related business events being generated in real-time, and provides an assessment of business process based on pre-defined KPIs [9]. This allows greater operational visibility of the business to relevant process owners for assessment and decision-making via real-time important metrics with respect to frequencies of such errors and their potential damage on process performance, and other dimensions such as cost, schedules, and so on [5] [6]. A key concept of BAM is the aggregation of basic Events about the current state and the results of business processes into quantitative measures, so-called Key Performance Indicators (KPIs).BAM is visually displays the most important information necessary to realize one or more goals, unified and sorted on a single screen so that the information can be monitored at a glance [3].

III.   Key Performance Indicator (KPI)

Key driving factor which implements the strategic objectives of enterprises and it is an evaluation index of the core events, it formulates around the enterprise strategies, and it is a form of expression for the quantified strategy [4]. Key performance Indicators are used to measure staffs' work performance indexes, so it is the important part of the performance plans.

IV.   Case Study

A small account payable BPM system has been developed and measured using bizagi BPMS as Shown in fig (1).The system has four pool and three phases, the Reception receives invoice and send it to financial

assistance that match the invoice with purchase order, if match then check if the product or service is approved or not, if approved send the invoice to the accounting to update ERP. If invoice not matched with purchase order or if the product or service is not approved return the invoice to the supplier. The process of approved return the invoice to the supplier is sub process that consists from three processes, first process is justify the rejection process, if the invoice is rejected, the person who executes this task must indicate, the person who executes this task must indicate the reason for rejection either because the information does not match the purchase order or because the products or Services are unsatisfactory. Second process is Inform Supplier This is done automatically by sending an email to the supplier with the reason for the rejection of the invoice and the return of products, if the products haven't to be returned then end the task, else go to return products and to the products are returned to the supplier´s address.
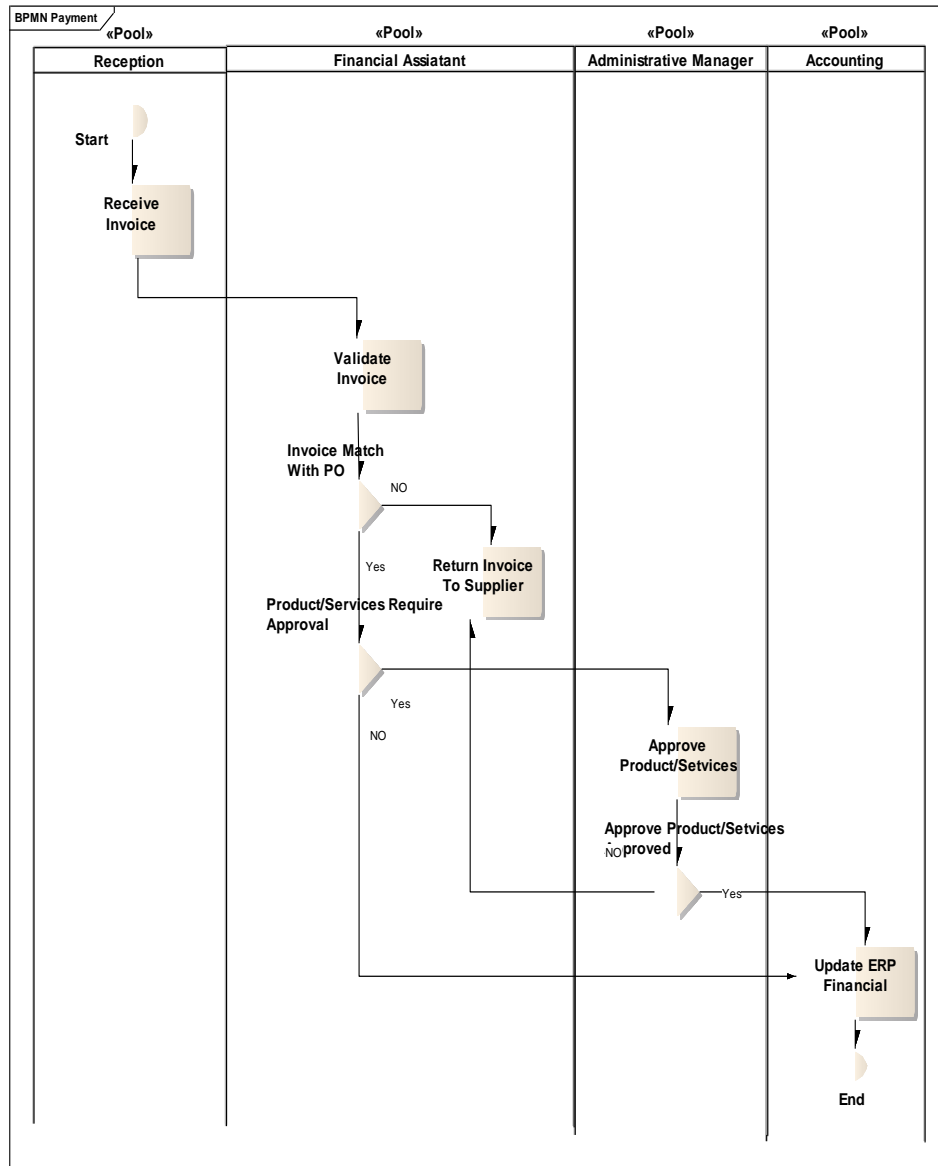

Fig (1): payable BPM system has been developed and measured using bizagi BPMS.

V.   Discussions

The paper describes the BAM for the process and task, and describes the load analysis and work in progress for both as follows:

1-   **Task BAM:** provide a real time analysis for the current state of all ongoing Tasks. Two types of BAM has been described:

A-   Work in progress: As shown in fig (2): pie-chart shows the percentage of Tasks for a given Process that is on time (green color), at risk (yellow color) and overdue (red color). Cases can be filtered by Process or any of the Dimensions defined. Fig (3) shows in vertical columns the number of cases that will expire per days.
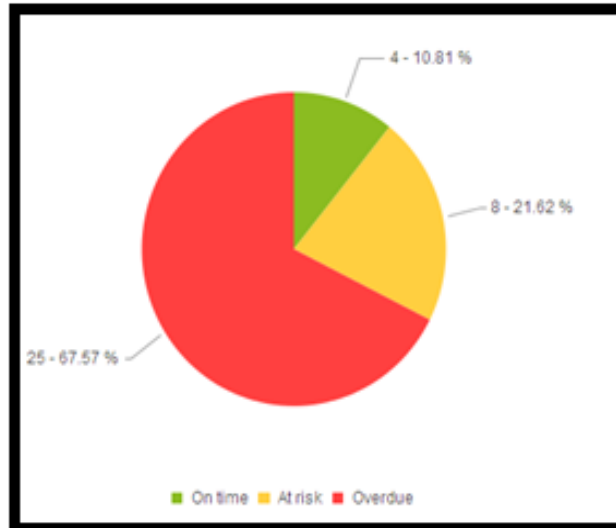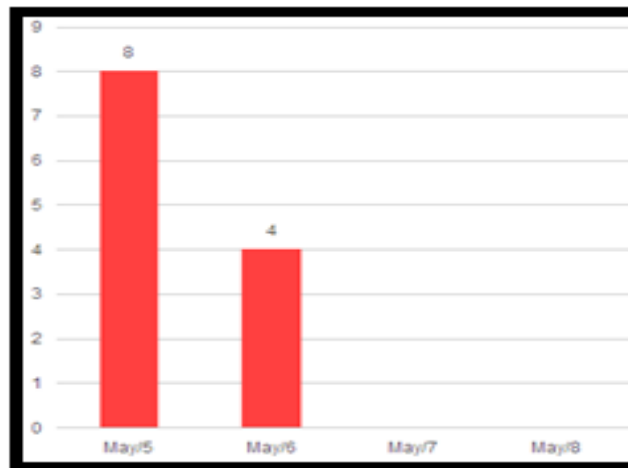
Figure (2): percentage of Tasks

Fig (3): Tasks that will expire per days

B- oad Analysis:

Shows the summary of each case that are on time (green color), at risk (yellow color) and overdue (red color) as in fig (4).
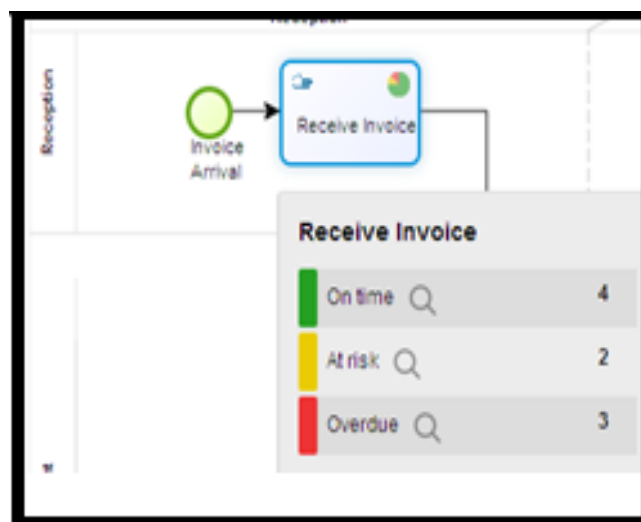

Fig (4): shows the number of cases on time, at risk and overdue.

Manual Task	On time	At risk	Overdue	Total
Receive Invoice	4	2	3	9
Validate Invoice	0	6	19	25
Return Invoice To Supplier	0	0	0	0
Approve Product/Services	0	0	3	3

Fig (5): Number of cases per status

Process BAM:
Provide a real time analysis for the current state of all ongoing Process. Two types of BAM has been described.
A- work in progress:
Shows for all active processes the amount of cases that   are on time, at risk or overdue as in fig (6).
B- Load Analysis:
Displays a histogram with the number of ongoing cases that are on time, at risk and overdue, for each Process as shown in fig(7).
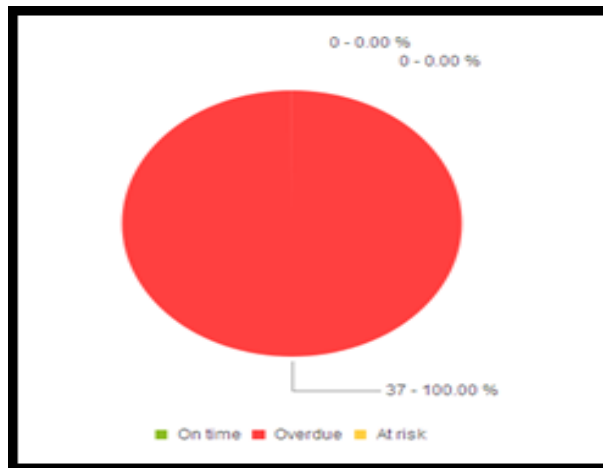
Fig (6): Case Status

Fig (7): Case Status for the process

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VI.   Conclusion

In this paper we have presented a framework that performs monitoring of Business Activity Monitoring (BAM) of business processes running on top of a Service-Oriented Architecture. Besides providing up-to-date dashboard information about the current process performance, the main goal of our framework is to enable what we refer to as dependency analysis, i.e., an analysis of the main factors that influence the business process and make it violate its performance targets. The result of this analysis is represented as graphs.

VII.   References

[1].   Stefanie e at "BUSINESS PROCESS MANAGEMENT", [9TH INTERNATIONAL CONFERENCE, Chennai. India, eISSN 1611-3349, April 2011].

[2].   Han, H., Kang, J. (2008). "A Business Activity Monitoring System Supporting Real-Time Business Performance Management". [Third 2008 International Conference on Convergence and Hybrid Information Technology, 11-13 November 2008. doi: 10.1109/ICCIT.2008.224. Retrieved: November 25, 2012].

[3].   Jan-Philipp e at, "Extending BPMN for Business Activity Monitoring" [45th Hawaii International Conference on System Sciences, 2012].

[4].   Wang Pan and He Wei, "Research on key performance indicator (KPI) of business process", [Second International Conference on Business Computing and Global Informatization, Shanghai, 2012].

[5].   W.Schmidt, "Business Intelligence and Performance Management,Springer-Verlag", London ,2013.

[6].   http://www.redbooks.ibm.com/redbooks/pdfs/sg247638.pdf, July 2008

[7].   James Crump, "business activity monitoring (bam): The New Face of BPM, June 2006.

[8].   BusinessActivityMonitoring.http://www.fujitsu.com/downloads/SVC/fc/fs/bam.pdf.Access date:[Second of Nov,2015-6:10 PM]

[9].   Peter Rausch • Alaa F. Sheta • Aladdin Ayesh, Business Intelligence and Performance Management, 2013.

[10].   Kapil Pant, Matjaz B. Juric,Business Process Driven SOA using BPMN and BPEL,August 2008.

[11].   S.Jaya Krishna, "business Activity Monitoring, An Introduction", ICFAI University Press, 2006.

[12].   https://en.wikipedia.org/wiki/Business_activity_monitoring. Access date:[Second of Nov,2015-10:10 PM]

[13].   Andrew Greasley, "e-Study Guide for: Operations Management", ISBN 9780470997611,2012