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RESEARCH ARTICLE

MATCHING OF PROCESS DATA AND OPERATIONAL DATA FOR A DEEP BUSINESS ANALYSIS: CHECKING THE SUITABILITY OF PROCESS MANAGEMENT TOOLS AND DATABASE MANAGEMENT TOOLS

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ABSTRACT:- Companies have long been taking assistance of simple business analysis to make their strategic decisions but the dilemma of using this method to make internal and external decisions is that the decision makers can see only one side of the picture because the context of the business process is missing. So the decisions made in the light of the business analysis are not accurate. Simple business analysis focuses only on the data itself from various applications and the ambience (context) goes in the background which subsequently affects the decisions made. In today's competitive business environment, organizations cannot solely rely on the data despite they have to focus on the context of the data. To collect all the relevant information about the particular process the process logs, operational data and its related event logs ought to be considered and integrated. This matching will allow us to take advantage of both data and its semantics. The out of research will facilitate decision makers to ponder on the whole scenario and can make way better decisions.

Keywords:- data mining, process data, audit trail, amalgamation of data, event log

I. INTRODUCTION

Process mining techniques are used when no such explanation of the process can be obtained by other approaches, or when the worth of an existing documentation is still in suspicion. For example, the audit trails of a workflow management system, the event logs of an organization system. Such event logs can also be used to compare event logs with some previous model.

Contemporary management trends such as BOM (Business Operations Management), BPI (business process intelligence), BAM (Business Activity Monitoring) illustrate the interest in supporting the diagnosis functionality in the framework of Business Process Management technology.

Data mining techniques work on data efficiently and make rules and produce different patterns and many important decisions are made on these rules and pattern. But because the focus of business analysis in only on data, all the mining algorithms are applied on data so the most important part misses from the picture which is the context of the data. So with the context of the data the decisions cannot be made more effectively because context is the history of the process e.g. process priorities over other processes, which particular process generates which process, which process is generated at a specific point in time etc. The problem statement of this research is following:

Many companies have long been taking assistance of simple business analysis to make their decisions but the negative point of using this method to make internal and external important decisions is that the context of the business process is missing because these are only concentrating only on the data. So the decisions made in the light of the business analysis are not accurate because the decisions only relying on the data can never be accurate and reliable all the time.

The objective of this research work includes:

By taking all the relevant information about the particular process from the process logs, where the process log contains.

1. Process id.
2. Time of the process execution.
3. Data used by the process.
4. Sequence by which processes executed etc.

With the operational data, the data which is present in the database tables. All the information about the data is present in the history logs of the database (data dictionary). By integration of these two approaches the related information would come out. This matching will allow us to take advantage of both data and its semantics. The out of research will facilitate decision makers to ponder on the whole scenario and can make way better decisions.

II. DEEP BUSINESS ANALYSIS

In this research the Database management system and process management system will be considered. As a matter of fact, when DDL(creating tables, changing the table definition ALTER TABLE, removing a table DROP TABLE, creating an index CREATE INDEX, removing an index REMOVE INDEX) DML (select, update, insert and delete), TCL statement is issued. By creating tables into the database and keeping track of which information is being stored will be captured in the event logs (maintained in the data dictionary table) of the database. Also inspect what sort of information is stored by different database management systems in each (their) event log.

Contrary to this the process management tools will be viewed and also consider the process logs maintained by each application about the particular process.

Then the research will guide us to check the suitability of process management tools and database management tools, that which database management tool in more effective, appropriate and producing better results in combining particular process management tool. Then the comprehensive and concise report will be mulled-over to facilitate the decision makers to make their decisions more reliable and authentic.

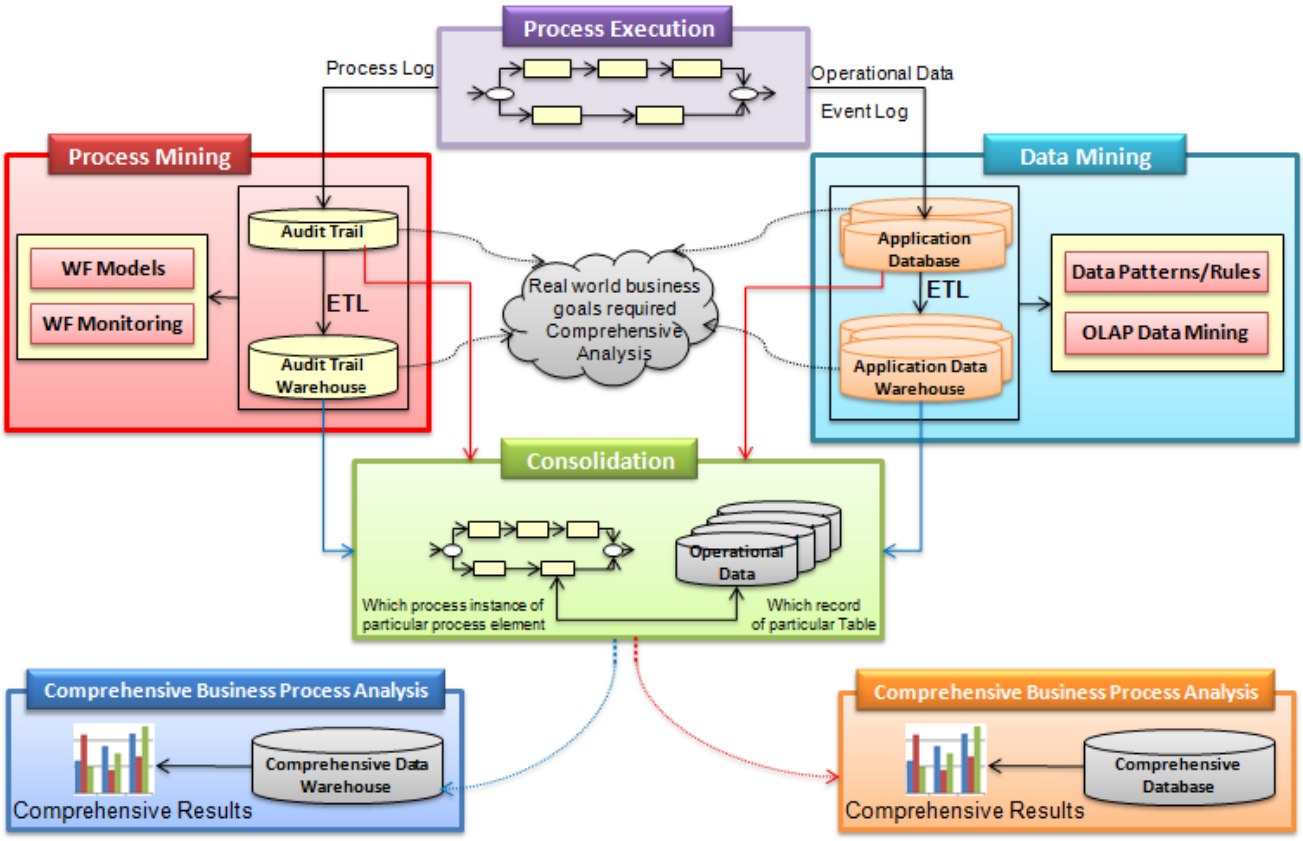

Figure 1: Research Methodology

EXAMPLE SCENARIO

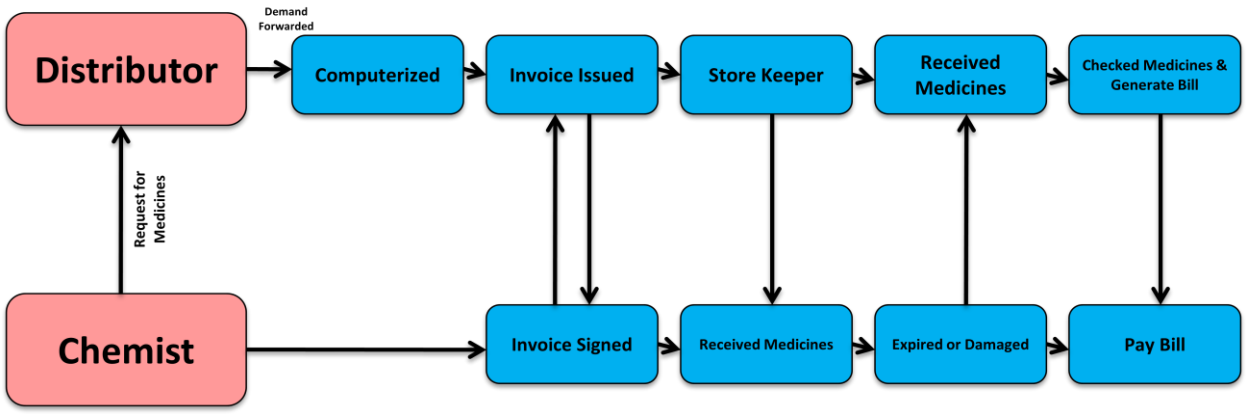

Figure 2: Medicine Distribution process in BPMN

Fig. 2 shows schematically which steps are needed in a Medicines purchasing scenario modeled by means of BPMN (Business Process Modeling Notation) and gives an of the process flows related to Distributor and Chemist. The processes are designed as executable workflows controlled by a workflow management system. The process is started by a Chemist demand for purchasing required medicines from the Distributor (having medicines of one or more companies). After receiving the Chemist's input (Id, Name, License_no, period_of_credit), Distributor enters the demand and checked the medicines whether these required medicines are available. After that invoice issued from the Distributors end and Chemist signs that invoice and the required medicines should be hand over to the customer. In the contract between Distributor and Chemist the period of credit has to be considered, because many chemist like and prefer to purchase medicine on credit bases.

In case of any damage of expiry of medicines the chemist returns medicine to the Distributor. Then these medicines are checked by the employee of the Distributor then the amount of these (damaged/expired) medicine deducted from the bill (grand total) which is generated by the Distributor.

Most workflow systems record workflow execution data in a log file or database, called audit trail.

The table shows the audit data and operational data. The process logs contain the specific information about the specific process and the event logs contain information of the operational data. As discussed above the both if treated separately then pure and unadulterated information can not be attained. So these both logs (process log and event logs) ought to be considered and combined as these are combined in the table. This amalgamation leads us to much more accurate results because now we got the whole picture.

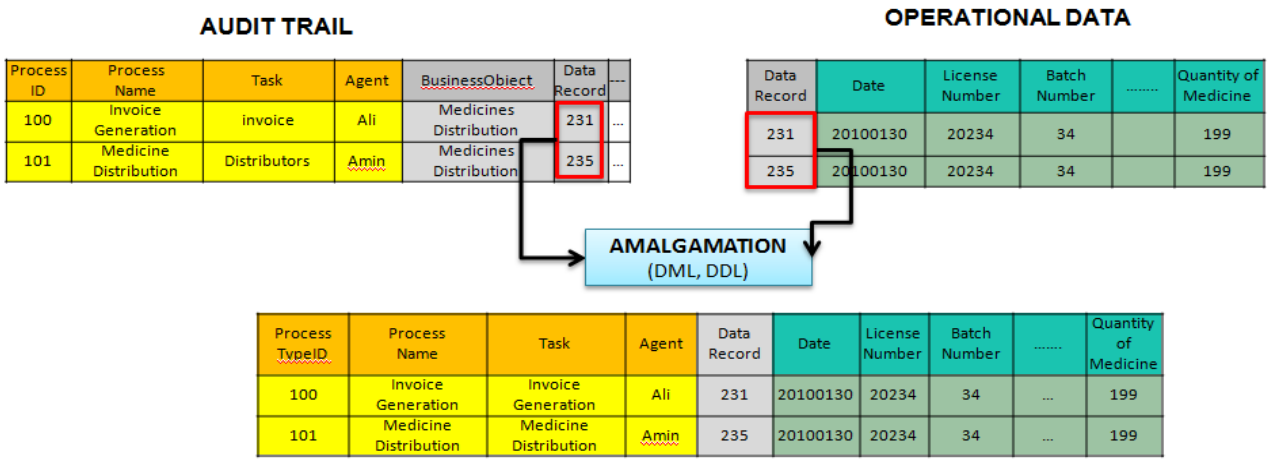

Table 1: Comprehension database

Then this integration (integration is done with DML and DDL) is stored in Comprehension Database and Comprehension Data Warehouse for decision makers to make their decisions on that data.

III. DOMAIN SPECIFIC WORK

Enterprise Information Integration Systems like IBM Information Server [18] support manual matching to combine organizational data. it is still very lengthy. In the PISA tool [4], the designer of the workflow has to put in manually an additional activity which matches workflow and business data. With this approach the semantics of the process is imprecise. In another approach described in [4] matching relationships are manually discovered. In the process warehouse of [12], the amalgamation with operational data must be detected manually by the business analyst. It seems to be complicated because there is one operational table for each process model connecting the data in each process instance.

Contrasting manual matching where you can work on any data, semantic approaches concentrate on particular matching scenarios in a restricted domain. Typical semantic matching scenarios are used in data amalgamation to supply a uniform query interface for distinct data sources [13]. Our focus is on matching both operational data and process data. In the Web service area annotations are used to enable an automatic Web service composition (e.g. Adaptive Service Grid project [21]).

For an optimization of processes, a profound analysis of all relevant information in the company is necessary. For the collection of the relevant information the matching of process data and operational data is important to achieve actionable results [1]. The data mining techniques use data alone and make rules solely on data. Therefore the context of the data should also be considered [3]. The context of the data is located in the event logs of the Database Management System tools (i.e) oracle etc. this information contains the complete history of the process. By combining process logs and event logs from the database management systems, organizations can add process context to their reports [2] to gain maximum benefits.

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