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ELTA: New Approach in Designing Business Intelligence Solutions in Era of Big Data

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Abstract

Current work presents new approach for designing business intelligence solutions. In the era of big data, former and robust analytical concepts and utilities needs to adopt themselves to changed market circumstances. Main focus of the work is to address acceleration of building process of a "data-centric" business intelligence solution on one side, and also prepare business intelligence solutions for big data utilization. Research is addressing following goals: (a) reduce time spent during business intelligence solution designing phase; (b) achieve flexibility of business intelligence solution by removing problems with adding new data sources; (c) prepare business intelligence solution for utilization of big data concepts. Research proposes extension of existing Extract, Load and Transform (ELT) approach to the new one Extract, Load, Transform and Analyse (ELTA).

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1. Introduction

Companies are following different strategies in order to be competitive against others. According to [11], the advantages can be derived from following two aspects: (1) operational efficiency and (2) unique value creation for customers. Both aspects involve building an enterprise structure and designing a business process in a systemic and unique way.

For these reasons discovering new business value adding process based on business historical behavior (extracted from data) to overcome their competitors is emerging. Such can be achieved with support of business intelligence (BI). According to [12] current BI implementations suffer from several shortcomings:

- Missing focus on the individual needs of particular analysts or decision makers. These users are forced to rely on standard reporting and predefined analytical methods that often do not answer to all needs of the individual. They strongly depend on either IT administration or enhanced technical skills.
- The lack of business context information, such as definitions, business goals and strategies as well as business rules or best practices for the provided analytical data. Hence, business users have to understand the semantics of data by themselves and they have to take decisions and derive strategies using additional information sources, which often leads to an escalation of efforts and costs.
- Poor alignment between Business and IT department. The setup and configuration of current BI systems requires deep insight in both the data to be analysed and the intended analytical tasks. Content and data models have to be provided in advance by the IT department and it must support the whole information in the decision making process.
- The modal time for new BI implementations is between 3 and 6 months causing implementation and support costs that often deter companies of a wider BI deployment.
- BI solutions have a strong focus on structured, enterprise-internal data but lack the capability of integrating external and/or unstructured information in an easy, (near) real-time and effective way. As a consequence, a lot of useful information is never included in the analysis. Not considering this information could provide a distorted or incomplete view of the actual world and consequently, it could lead to wrong business decisions.

Current work focuses on a presenting new approach for designing BI solutions. Presented approach is addressing following goals: (a) time reduction that is spend on BI solution designing phase; (b) flexibility achievement in BI solution by removing "data agnosticism"; (c) preparedness of BI solution to be used with big data. The research is extending existing concept ELT (Extract, Load and Transform) to an ELTA (Extract, Load, Transform and Analyse).

2. Related Works

2.1. Business Intelligence and Big Data

Business intelligence systems support and assist in decision making processes. It's also taking part in organization strategic plan, which normally addressing achievement of management effectiveness. BI is defined as "*a set of methodologies, processes, architectures and technologies that transform raw data into meaningful and useful information used to enable more effective strategic tactical, and operational insights and decision-making*" [1]. Effective BI systems give decision makers access to quality information, enabling them accurately identify where the company has been, where it is now, and where it needs to be in future. Despite the immense benefits that an effective BI system can bring, numerous studies shown that the usage and adoption of BI systems remain low, particularly among smaller institutions and companies with resource constraints [1].

According to [2] the BI system should have a following basic features:

- **Data Management:** including data extraction, data cleaning, data integration, as well as efficient storage and maintenance of large amounts of data
- **Data Analysis:** including information queries, report generation, and data visualization functions
- **Knowledge Discovery:** extracting useful information (knowledge) from the rapidly growing volumes of digital data in databases

The most important feature to succeed in building BI solution is to perform well on stage of the *Data Management*. Data Management being a foundation of BI solution, it's usually the most stressing and time

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