Understanding Executive Information System: A Study EIS Success Factors in Business and Decisions

Mridul Tewari

Asst Professor, Pioneer Institute of Professional Studies, Indore

Abstract:

There has been rapid development in the number of implementations of Executive Information Systems (EIS).Yet the success rate of these systems has not been large.To belittle the danger of failed implementations, studies of theories and success factors for EIS implementation are recommended.This report concentrates on examining a theoretical account of successful EIS implementation and identifies success factors.

Executive Information Systems are designed to improve the quality of the strategic level of management in the organization through a new type of technology and several techniques for extracting, transforming, processing, integrating and presenting data in such a way that the organizational knowledge filters can easily associate with this data and turn it into information for the organization. These technologies are known as Business Intelligence Tools. Merely in order to build analytic reports for Executive Information Systems (EIS) in an organization, we need to design a multidimensional model based on the commercial enterprise model of the formation.

This report presents some multidimensional models that can be used in EIS development and offer a new model that is suited for strategic business requests.

Introduction:

The primary objective of EIS (Executive Information Systems) is to provide in real time representative information to the high-level or strategic management and together, analyze, and incorporate interior and outside data into dynamic profiles of key performance indexes (KPI).Administrators have to handle and manipulate very large bands of information.In perfume, they can deliver a customized view that pulls data from disparate sources and summarizes it into meaningful indicators.

In parliamentary law to provide aggregate information and indicators, EIS systems collect, trans-shape and incorporate data from diverse sources through Business Intelligence tools and technologies like: data warehouses, OLAP, data mining, analytic SQL reports.

But also, a major objective of EIS systems is to provide a friendly graphical interface and when this is customized for the individual manager, lets users to access corporate information and complements the executive's personal knowledge and provide quantitative di-agnostics to monitor the progress of decisions.

EIS' Multidimensional Models

In lodge to collect information from diverse sources and ERP systems that are carried out in an organization from different working areas or modules such as: Financials, inventory, purchase, order management, production we need to analyze and design the business model and strategic requests.This example has to be represented on a logical model and physical model in the data warehouse and also applied for extracting and delivering data through OLAP technology.These examples are known as multidimensional models and basically they represent an extension of the relational model or ER schemas or a multidimensional view over facts.

*Assistant Professor, Pioneer Institute of Professional Studies, Indore

between some dimensions and facts or criteria

• *N-dimensional cube based models* that use a multidimensional view over an individual situation or data.

Among ER extension models we can mention: Gray's model based on CUBE and ROLLUP operators with GROUP BY clause in SQL language that aggregate information over some attributes; Li and Wang's model or Gyssens and Lakshman's model that are an extension of relational schema [MUNT04].Only the most significant example is Ralph, Kim-ball's model described in [KIMB96] in which he offered the star schema as a representation of a n-dimensional block.This scheme contains a central fact table with many courses and measures in relation with the smaller tables called dimensions. Basically the joins between the fact table and the dimensions are similar to the ER joins. From this model later was proposed the *snow flake schema* with joins between dimensions not only between fact and dimensions. After it was produced a galaxy or a fact constellation schema with many fact tables in relation with many dimension tables.

In the cube based models' area, we can mention Agrawal, Gupta and Sarawagi's model with minimum set of relational algebra's operators, but in which data structure is based on one or more n-dimensional blocks.In Agraval's vision these cubes are made of dimensions specified by name and values and cube's elements defined through a function that associates values to a n-dimensional row represented by the cadres of the third power.

Besides, in this category, we can mention Cabibbo and Torlone's model or Blaschka's model [MUNT04] that defines an extension of ER technique called ME/R technique.In his vision the model contains dimensional levels, a 1: n fact relationship and a binary relationship called classification relationship between two hierarchical layers.

In Executive Information Systems the multi-dimensional model that is used have to be able to overhear the business requests. All we need is a business vision over data structure so the star schema or the n-cube based models have to design and incorporate business aspects or demands not only the facts or the relationship between data. The executives re-quest a synthetic view over facts and indicators and these key performance indicators are built from the entire organizational data or even external data.

Another request is to provide a friendly graphical interface with advanced capabilities of slicing and dicing through data and easily produce a new view over data by rotating dimensions and drill down or cast up over hierarchical levels.Then we call for a multi-dimensional model in which these operations can be reached easily, in real time and that can it overhead the entire business model with the relationship between dimensions, facts and hierarchies and it is based on the entire organizational data at operational level, tactical level and strategic stage.

Founded on these considerations, we propose an extension of the principal or the constellation schema, but with aggregate data and power structures in fact tables not only in dimension tables.The example is structured over three distinct levels and we can call it a pyramid model with the following structure:

• Organizational level (or the basis of the pyramid) – containing dimensions and facts with an organizational scope, at a general level, that shape and are common to the entire activities. Such dimensions can be: <time>, <zone>, <product>, <currency> and facts: production, purchasing etc. The data are at a detailed level with multiple hierarchies over each dimension table.

• Departmental level– containing dimensions and facts for the departmental levels of the organization and particular activities in these departments or subject area of interests, group by data marts or data centers. Such dimensions can be: <account>, <client>, <vendor> and facts: stocks, payments, sales etc. The data are at a detailed and aggregate level, withspecialized hierarchies over each dimension table.

• Strategically level – containing dimensions and facts derived from the foundation dimensions and facts, with specific elements for the strategic analysis, like <intercompany>, <plan>, <budget> and facts: cash-flow, kepi.The data are at an aggregate, synthetic level with specialized hierarchies over each dimension table.

The chief feature of the exemplar is that between the dimension tables and the facts from different layers of the architecture can establish a relationship and likewise the fact tables can have hierarchies and class attributes that can be utilized to drill down or roll up.

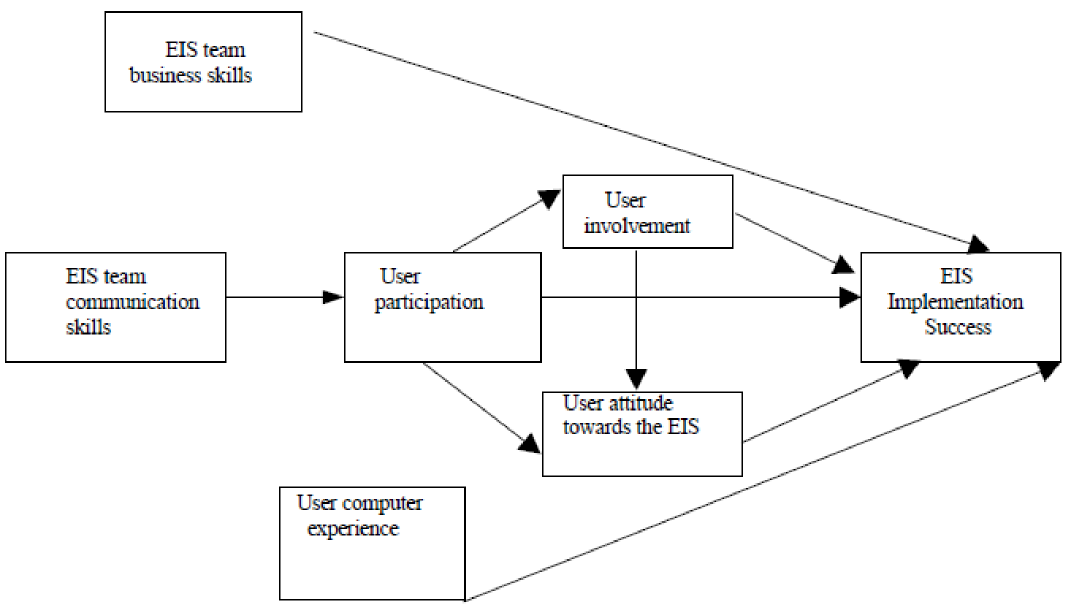

Figure 1. A conceptual model of EIS implementation success.

EIS implementation success:

In previous research, system success has been measured in the terms of system quality, system usage, user behaviour and attitudes, and user satisfaction. The most cited IS success model was developed by DeLone and McLean.It introduced six surrogate measures of IS success: system quality, data quality, user satisfaction, system usage, individual impact and organizational impact. According to DeLone and McLean system quality is the measurement of the quality of information processing, while information quality is the measurement of the quality of output from information systems. System use refers to recipient consumption of an information system while user satisfaction is the user response to the use of the production of an information system.Individual impact is the impression the information has on the user's behavior, including improving personal or departmental performance, and organizational impact refers to the effect of information on organizational functioning.

There are reasons for not utilizing the three beats of the IS success model system use, personal impact and organizational impact¾ in this field.On that point are some real and intangible benefits that do not add themselves to identification and calculation for price or benefits.Coherent with this, a majority of the firms did not use cost/benefit analysis in EIS assessment.In other words, the benefits, and the impact of EIS on the person and the organization, are difficult to measure.Some other measure of IS success, system function, is not a good measure because the system usage can be high in a poor system when use is compulsory.The three most commonly used measures in the IS success model, system quality, data quality, and user satisfaction was employed in this field.As remarked, the IS success model emphasized on product quality.To increase the potency of the steps used in this research, service quality was used in this work.Then, user satisfaction was coupled with systematic quality,information quality and service quality to result inmulti-attribute measures. These three selected measureswere user satisfaction with system quality, informationquality, and service quality.

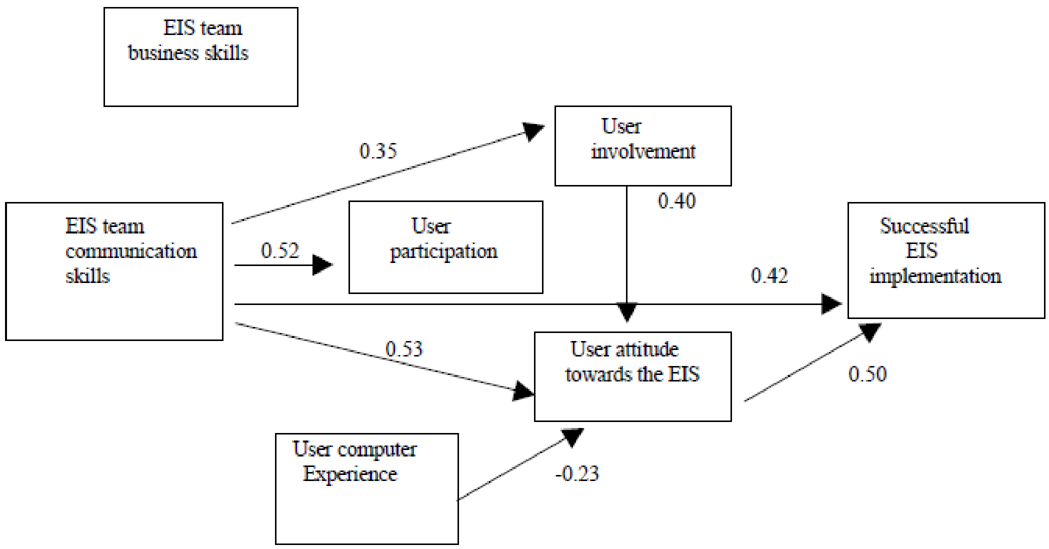

Figure 2. A path model of successful EIS implementation.

Identify the limitations and advantages of the model:

Advantages of the model:

Flexibility – new components or objects like new dimensions or facts can easily be included in the model without touching on the existing architecture or remodelling the system and the loading process for a specific point can be made without refreshing the whole information;
Realistic model of business essentials – the three level architecture is founded along the actual model of business requirements, thus this model can be mapped at the each level of the pyramid;
Functioning in the drill-down or roll-up operations – because the dimensions and facts are divided at each stage we can easily navigate through hierarchies from a floor to another;
Incremental development – the model can build in stages and each level can be validated and applied before the following phase;
MIS and DSS support – the bottom and middle levels can be used for design and realized a Management Information System (MIS) or a Decision Support System (DSS) because these systems can use the specific dimension and fact tables from these stories.

Disadvantages of the model:

*High complexity – because it is incorporating three different level the business model need to be careful analyzed and planned in order to identified the proper and suitable dimensions and facts and also the hierarchies at each stage.*An inadequate choice can bear a major consequence on the operation of the total organization;

Moderate performance of the interrogation process – in order to perform a complex query the model need to establish many relationships and connects between the fact and dimension tables and this can melt off the performance of interrogation;

Top-down and bottom-up development – In order to overhear the entire aspects of the business process we need to construct the systems in two directions: first top-bottom to model the strategic requirements and second, bottom-up for validating and fixing up the hierarchical flux of information.

Conclusions:

Administrator Information Systems improve the caliber of management in organization through a new character of engineering science and techniques for extracting, translating, processing and delivering data in order to provide strategic information.Also EIS must have the power to permit directors to view data in different perspective, to drill-down and roll-up to aggregate levels, to navigate and on-line query data sets in order to discover new ingredients that affect business processes and also to anticipate and forecast changes inside and outside the system. In order to satisfy these requirements we demand to design and use a multidimensional model that is suitable for business model so we proposed in this paper a pyramidal model as an annex of the star schema or the galaxy schema but with different levels of theatrical performance and also with aggregate and hierarchies in fact tables.

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