

# Significance of Critical Success Factors Adopted In Data Warehousing Application

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## ABSTRACT

Data warehousing technology is more multifaceted, entails substantial capital investments and development time, where several establishments are fail to understand the full paybacks from it. To explore the empirical research of Data warehousing the implemented industries have been find the impact of the selected issues in critical success elements, like Administrative (Organisation), project-related and circumstance dimensions. The proposed Data warehousing architecture integrates innumerable source of elements, it provide the basis for comprehensive approach to the user interaction to the Data warehousing applications.

**Keywords :** Data Warehousing, Critical Success Factors

## I. INTRODUCTION

Data warehousing is an integrate, business oriented, nonvolatile, time variant assortment of data to upkeep top management assessment practices, where the conception of unified statistics is most desirable for the effective maintenance of creative management. Data warehousing application helps to access, aggregate and analyze huge volume of data from various bases to recognize historical efficiency of data to forecast and achieve expected data, i.e. essentially Data warehousing technology is more multifaceted, it needs massive resource is required to spend and engages huge implementation time, i.e. the development of data warehousing application is a complex process, it requires various essential tools as well as techniques.

General issues in Data warehousing applications are:

- Which type of enquiry is required to perform by the customers?

- Which type of data is essential to accept for analysis?
- How to store and transform the data?
- Find the multiple sources of like data?
- Which architecture is best suit for the Data warehousing technology?

## II. LITERATURE REVIEW

Within a package of Data warehousing technology, many appropriate and essential dimensions are defined, but only few identified dimensions are referred. The above table intended to offers a list of previous related information in the area of data warehousing technology, Critical success elements, discussed in this study, they are, Researcher Solomon offer guiding principle to help top managements avoid collective drawbacks and difficulties in enterprise Data warehousing application, where problems are purely based on appraising prior associated revisions and general ground knowledge.

Authors	Factors	About the Paper
Wixom and Watson	<ul style="list-style-type: none"> <li>❖ Organizational factors                             <ul style="list-style-type: none"> <li>➢ management support</li> <li>➢ Champion</li> </ul> </li> <li>❖ Project factors</li> <li>❖ User participation, resources</li> <li>❖ Team skills</li> <li>❖ Technical factors                             <ul style="list-style-type: none"> <li>➢ Source system</li> <li>➢ Development tools</li> </ul> </li> </ul>	An empirical study which investigates the model of data warehousing success through cross sectional mail survey to data warehousing managers and data

Authors	Factors	About the Paper
Hwang et al.	<ul style="list-style-type: none"> <li>❖ Organizational dimension                             <ul style="list-style-type: none"> <li>➢ organization size</li> <li>➢ champion</li> <li>➢ Top management support</li> </ul> </li> <li>❖ Environmental dimension                             <ul style="list-style-type: none"> <li>➢ Business competition</li> <li>➢ selection of vendors</li> </ul> </li> <li>❖ Project-planning dimension                             <ul style="list-style-type: none"> <li>➢ project team skills</li> <li>➢ Coordination of organizational resources</li> <li>➢ consultants support</li> <li>➢ end user support</li> </ul> </li> </ul>	An empirical study conducted to investigate the factors influencing the adoption of data warehouse technology in the banking industry. The data was gathered based on the prior-related research and a mailed questionnaire to CIOs in 50 domestic banks.

Authors	Factors	About the Paper
Mukherjee and D'Souza	<ul style="list-style-type: none"> <li>❖ Technical issues                             <ul style="list-style-type: none"> <li>➢ data</li> <li>➢ technology</li> <li>➢ expertise</li> </ul> </li> <li>❖ Management issues                             <ul style="list-style-type: none"> <li>➢ executive sponsorship</li> <li>➢ Operating sponsorship</li> </ul> </li> <li>❖ Goals and Objectives issues                             <ul style="list-style-type: none"> <li>➢ business need</li> <li>➢ clear link to business objectives</li> </ul> </li> <li>❖ Users issues</li> </ul>	A theoretical study presents a framework to understand the critical success factors of the data warehouse in each phase of the data warehouse implementation process.

Table 2.2 Report of critical success elements based on Literature review

### III. ARCHITECTURAL MODEL OF DATA WAREHOUSING TECHNOLOGY

Data warehousing architecture is suitable across all various applications of Data warehousing technology in real life. All Data warehousing application may contain extraction of the information from the key system and transform of that data by put on a set of rules from source to the target and fetching the related data into a Data warehousing, it is called ETL process.

Data warehousing architecture hold some of the important technical linked design, data associated design, and software allied design, etc. are shown in Figure 3.1.

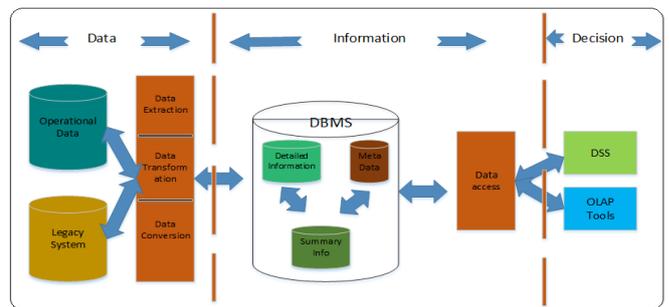


Figure 3.1 Standard Data warehousing Architecture  
The Data warehousing architecture include the occurrence of enterprise Data warehousing, data marts, where Data is transmitted from functioning DBMS, and this process called, extraction, transformation and loading (ETL) to the Data warehousing.

The process of the ETL offer a distinctive data for decision making purpose. ETL is said to be the most difficult process in Data warehousing building.

The development of Data warehousing starts from transmission of data from key format, then it pass to multi-dimensional data region for storing of data.

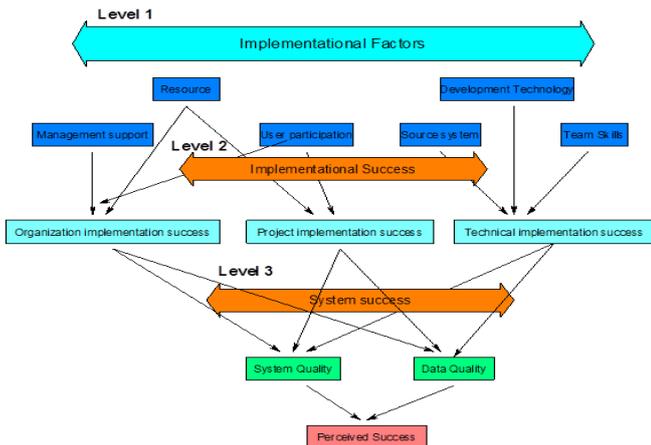


Figure 4.1 Research Model for Data warehousing Success factors

Because of several critical issues, the designing and development of a Data warehousing architecture is very high demanded, costly and critical.

#### IV. FACTORS AFFECTING THE DATA WAREHOUSING APPLICATION

For the development of data ware housing technology so many hardware, software and some specific program methodologies are required to complete the organisational specific application or project.

Figure 4.1 illustrates the implementational success factors that drive to success the data warehouse application development. The critical success factors are required to implement data warehousing application are defined in the literature review.

The implementational factors of data warehousing system is assembled into the several preliminary drivers, i.e. managerial consent, resourcefulness, participations of end user, developmental techniques, skilled members, and infrastructure facility, where the developmental drivers are needed to review and monitor the effectiveness and successfulness of data warehousing application.

The main phases for the Data warehousing life-cycle are shown in figure 4.2,

typically Data warehousing life cycle comprises of many stages, like, starting with requirement analysis, plan, develop, test, deploy, functioning, maintain. Brief description of life cycle can be defined as,

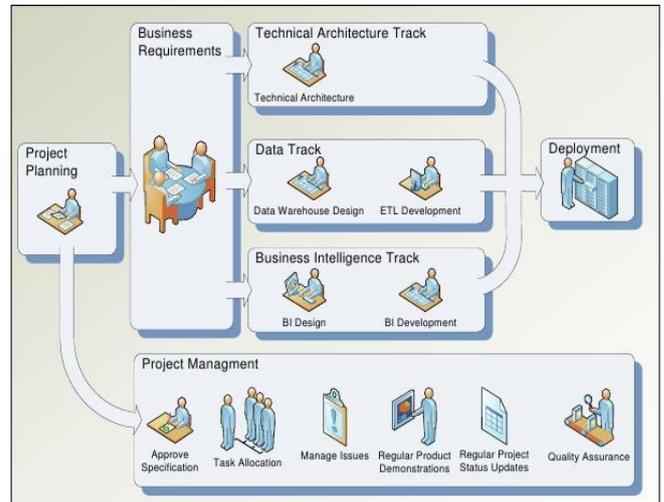


Figure 4.2 various stages in life cycle model of Data warehousing Application

#### V. EXPERIMENTAL SETUP AND DISCUSSION

##### A. Testing of Data warehousing Application

The significance of the System testing is test whole system has a single application, it might be manual test or automated test type. Even though each type of the test has a different job to verify the whole system, like Boundary value testing.

Boundary value analysis

1. Pay to sum of Rs.15000- tax value is 10%
2. Pay from 15001 to 25000- 18% of tax
3. Pay above 25000 – tax value of 20%

C1: Range of 12000 to 15000

C2: Range of 15001 TO 25000

C3: Above 25000

**Boundary value Conditions:**

C1: Value is non numeric

C2: Values<12000

C3: Values 12000 to 5000

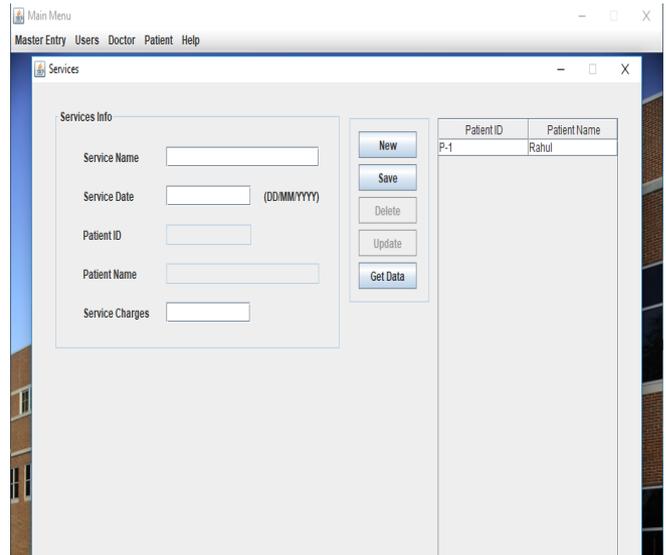
C4: Values 15001 to 5000

C5: Values 25001 to max

C6: Values above max

Table 6.3: Test cases for System testing

category	input condition	expected output	actual output
c1: Non numeric value	Non numeric value	Error	Error
c2: X<12000	X < 12000	Error	Error
c3:12000 to 15000	X >= 12000 to X <= 15000	No tax	No tax
c4: 15001 to 25000	X >= 150001 to X <= 25000	18%	18%
c5:25001 to max	X >= 250001 to X <= max	20%	20%
c6:more than max	X >=max	Error message	Error message



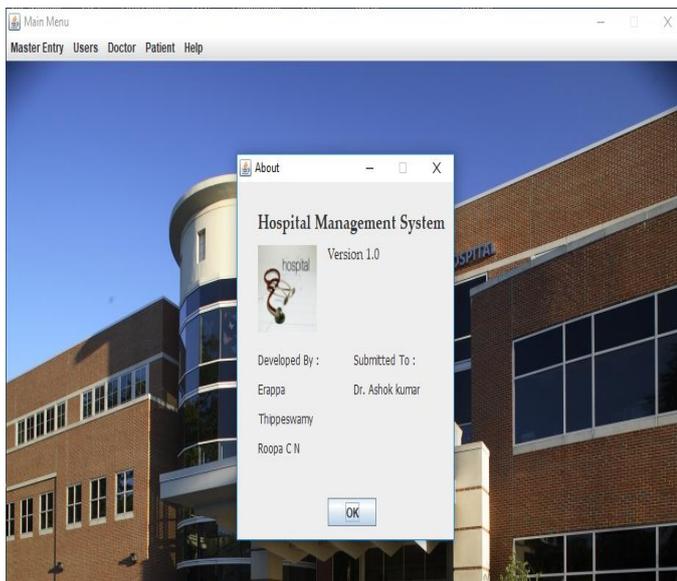
Services available to user in Hospital Monitoring system

## VI. CONCLUSION

Data warehousing technology is a significant tool to elicit data linked difficulties and improve decision making inventiveness for highly extended and viable market. Data warehousing application is a software package, but it is a multifaceted procedure to create refined and unified information systems. For the acceptance of Data warehousing technology needs huge fund, and developmental time is required. Therefore, the results from this case study described that all administrative, technical and project linked elements are most significant elements to implement Data warehousing technology in an organisation.

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Hospital monitoring system

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