

# **INTEGRATED INFORMATION MANAGEMENT MODEL FOR TEXTILES**

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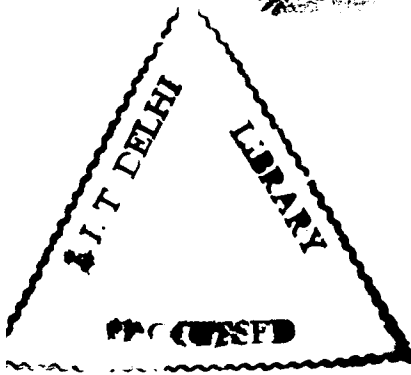
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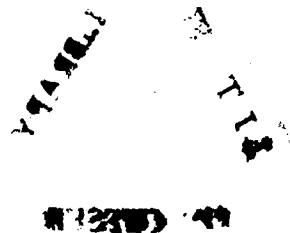


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**Chandrashekhar Chiplunkar**

## **CERTIFICATE**

This is to certify that the thesis entitled “**Integrated Information Management Model for Textiles**” being submitted by **Chandrashekhar Chiplunkar** to the Indian Institute of Technology Delhi, for the award of degree of Doctor of Philosophy is a record of bonafide research work carried out by him. Chandrashekhar Chiplunkar has worked under our joint guidance and supervision and fulfilled the requirements for submission of thesis, which has reached to the requisite standard.

The results contained in this thesis have not been submitted, in part or full, to any other University or Institute for the award of any degree or diploma.

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## **ABSTRACT**

As of today, the majority of the Indian textile units are not making use of integrated information systems to boost the business performance. This thesis takes a look at the possible reasons for the inadequate use of the integrated information systems. One of the major reasons for the under usage of such systems is potential of such systems in assisting the boosting of the business performance is yet to be fully understood.

Through this thesis an attempt is made to analyze the competitiveness of the Indian textile industry to propose a suitable model for the organization of the industry. An instrument is provided to analyze the business performance and a general information management model is proposed, based on easy-to-understand designing methodology suitable for both information systems analysis and business analysis. Finally data model based on event model is suggested for Codeless Database Management System (CDBMS) to support the development of the proposed integrated information management model.

In order to emphasize the need for having an integrated information management system, a structured questionnaire was developed to elicit the present state of the functioning of a business unit. A case study was conducted, in which the questionnaire along with the proposed event diagrams for the integrated information management solution were presented to the users of a reputed textile unit and the response was recorded. All the possible improvements, which can be achieved with the use of integrated information management solution, were highlighted to drive the point that the integrated information systems are very useful in improving the business performance of the textile unit.

The research also looks into the present international textile scenario and analyzes the Indian textile industry for its weaknesses and strengths to suggest the possible measures to improve its competitive ability. An IT (Information Technology) enabled model for Indian textile industry is presented for coordination of the fragmented Indian textile industry.

A need of presenting a designing methodology, which would be simple enough for participation of the users and yet effective enough from the analysis and designing from point of view of the information system as well as the business systems simultaneously, is addressed. An event related designing approach is proposed with the introduction of new tools for analysis and designing of information and business systems. Based on the suggested methodology, a complete set of event diagrams for the integrated information management model is presented along with the interaction diagrams and associated information elements to constitute the high level design specification for the integrated information system. A framework for application of planning system, which forms the core of an integrated solution, to textile composite mill is also discussed in detail.

A framework for developing a supporting development platform to convert the design specifications into a running system without any further coding, termed as Codeless Database Management System (CDBMS) is presented along with the data model. All the essential components and added advantages of CDBMS are discussed at length.

In summary, the thesis presents the following deliverables:

- Measures for improving the competitiveness of the Indian textile industry
- True potential of the integrated information management solution in making the organization competitive with respect to a textile unit

- A framework for application of production planning and control system to a composite textile mill
- Gaps in the existing designing methodologies
- EROS (Event Related Open Systems) designing methodology with event diagrams, interaction diagrams and event notations.
- High level design specifications for the integrated information management solution
- Essentials of CDBMS (Codeless Database Management System) with the proposed data model.

Key Words: Textiles, Information Systems, Integrated Information Management Model, Enterprise Resource Planning, System Analysis and Design, Database Management Systems.

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