Enterprise Resource Planning in Textiles

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ABSTRACT

A survey on the application of enterprise resource planning (ERP) systems in the textile and apparel industry was conducted. The survey identifies software packages that are used and linkages to applications such as e-commerce. The barriers to system implementation and factors considered in selection of software are described.

KEYWORDS: Enterprise Resource Planning, Textiles, Apparel, e-commerce

Introduction

An exploratory survey of ERP systems in textile manufacturing was in conducted November 2001. The survey investigated the following issues:

- What functions are included in textile ERP systems?
- Who are the vendors of ERP systems used in Textiles?
- What are the main factors in selecting an ERP system?
- What are the barriers to implementing ERP systems?
- What functions are linked with textile ERP systems?
- Are companies using electronic commerce?
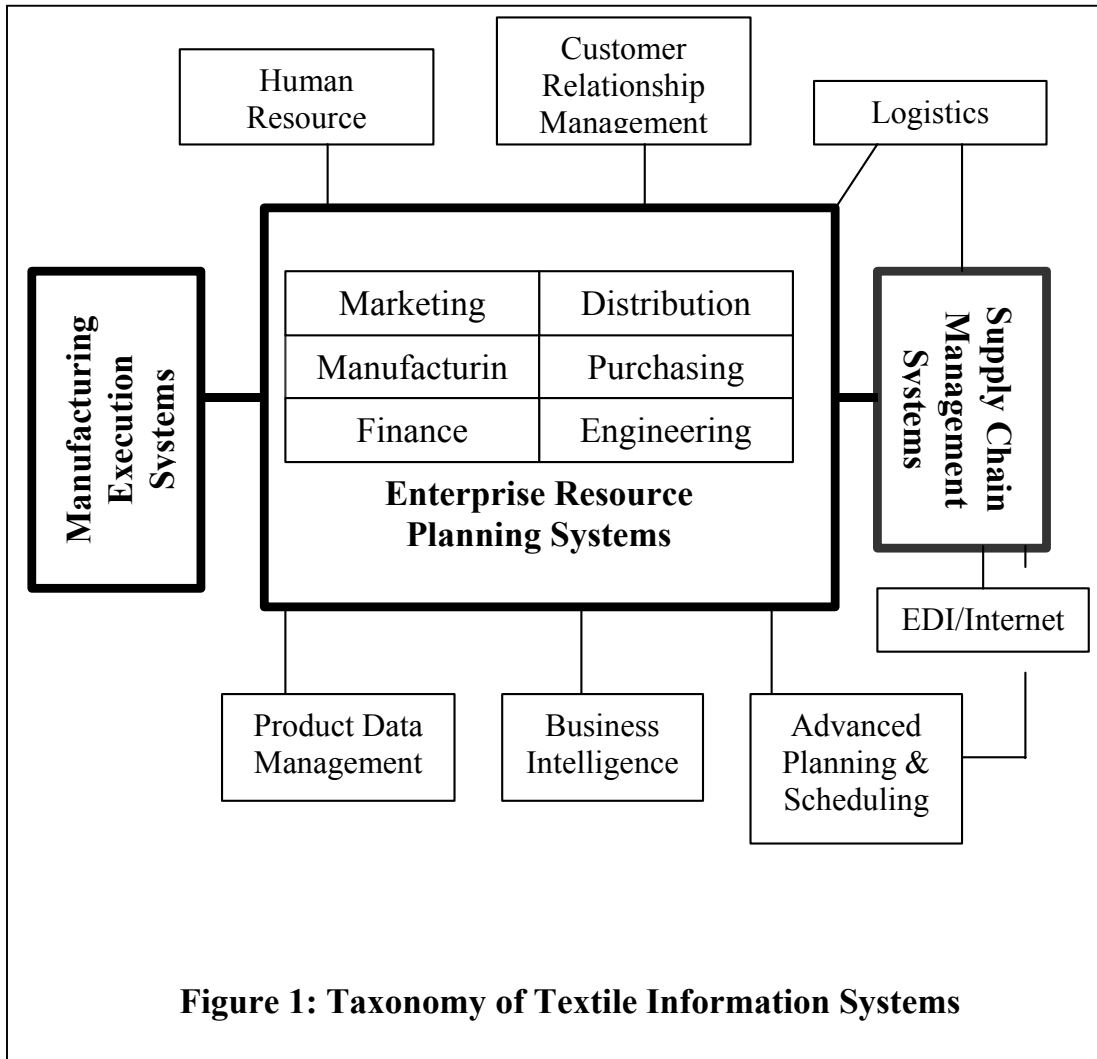
Enterprise resource planning is defined as

1) An accounting-oriented information system for identifying and planning the enterprise wide resources needed to take, make, ship, and account for customer orders. An ERP system differs from the typical MRPII system in technical requirements such as a graphical user interface, relational database, use of fourth-generation language, and computer assisted software engineering tools in development, client/server architecture, and open-system portability.

2) More generally, a method for the effective planning and control of all resources needed to take, make, ship, and account for customer orders in a manufacturing, distribution, or service company. [1]
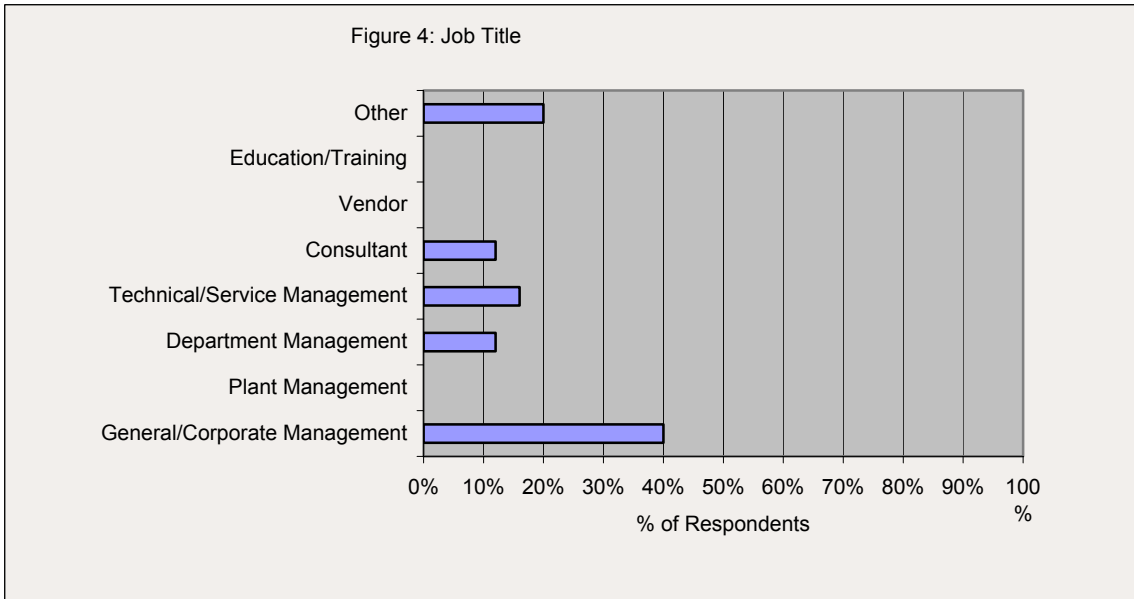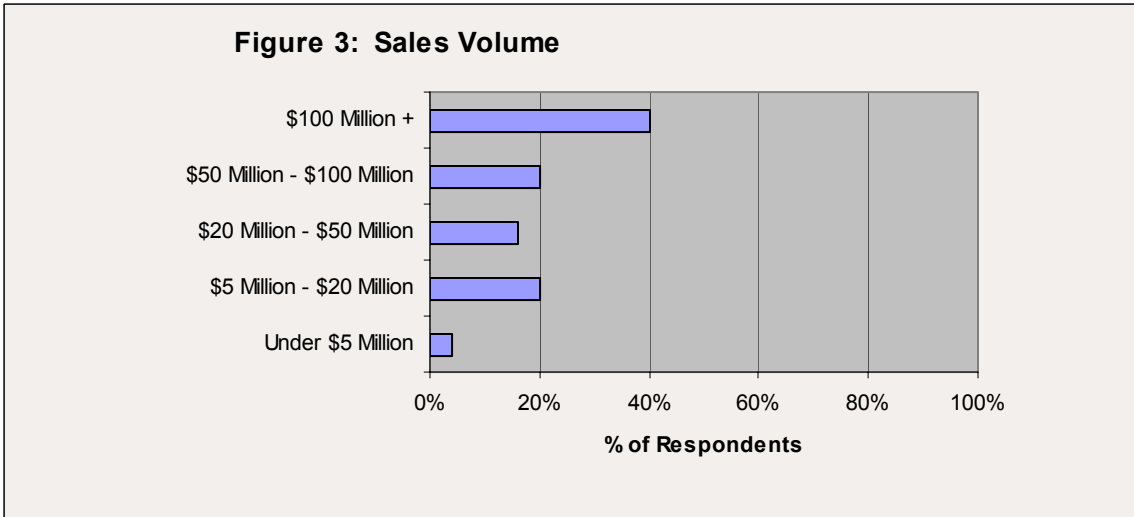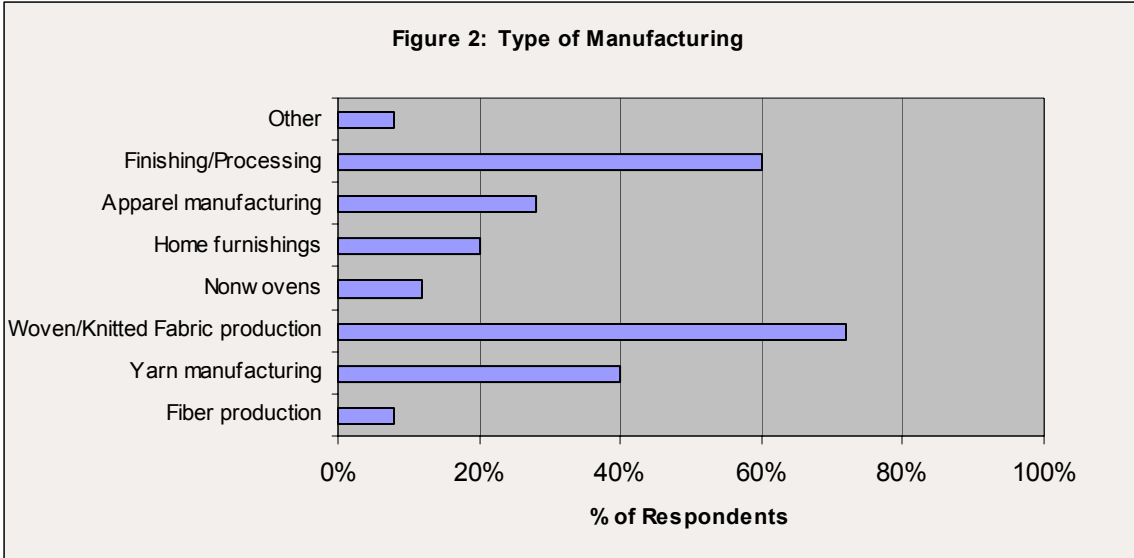
Enterprise resource planning systems are the connection between the plant floor and the supply chain. A taxonomy of information systems for textiles has been previously proposed and is shown in figure 1 [2].

Figure 1: Taxonomy of Textile Information Systems

| Human Resource | Customer Relationship Management | Logistics |

Manufacturing Execution Systems

Marketing	Distribution
Manufacturin	Purchasing
Finance	Engineering

Enterprise Resource Planning Systems

Supply Chain Management Systems

EDI/Internet

| Product Data Management | Business Intelligence | Advanced Planning & Scheduling |

Figure 1: Taxonomy of Textile Information Systems

An Internet based survey instrument was developed and an invitation to participate was sent to the members of the electronic discussion list of APICS Textile and Apparel Specific Interest Group. This list mainly includes people interested in planning and logistics in the textile and allied industries. Twenty-five usable responses were received. Profiles of the respondents are shown in figures 2, 3, and 4 summarizing the types of manufacturing, sales volume, job title, respectively. Because many respondents listed several types of manufacturing operations the percentages do not total to 100%. The respondents represented the many segments of the textile industry from fibers to end products.

Figure 2: Type of Manufacturing

Horizontal bar chart, X-axis: % of Respondents (0% to 100%)

- Other
- Finishing/Processing
- Apparel manufacturing
- Home furnishings
- Nonwovens
- Woven/Knitted Fabric production
- Yarn manufacturing
- Fiber production

Figure 3: Sales Volume

Horizontal bar chart, X-axis: % of Respondents (0% to 100%)

- $100 Million +
- $50 Million - $100 Million
- $20 Million - $50 Million
- $5 Million - $20 Million
- Under $5 Million

Figure 4: Job Title

Horizontal bar chart, X-axis: % of Respondents (0% to 100%)

- Other
- Education/Training
- Vendor
- Consultant
- Technical/Service Management
- Department Management
- Plant Management
- General/Corporate Management

ERP Systems

Figure 5 shows the functions that the respondents indicated were included in their ERP system. Three to fifteen different modules were reported as being included in each implementation. The most common functions are materials management, production control and sales. There was not sufficient data to conduct a statistical cluster analysis of functions by vendor, industry segment, or company; however, the number of modules reported varied even among companies with the same software. This could be due to the perception of the respondent and differences in implementations. Also, there is no standard description for naming each function. None of the respondents identified themselves as vendors so these numbers more likely represent an user's perspective.
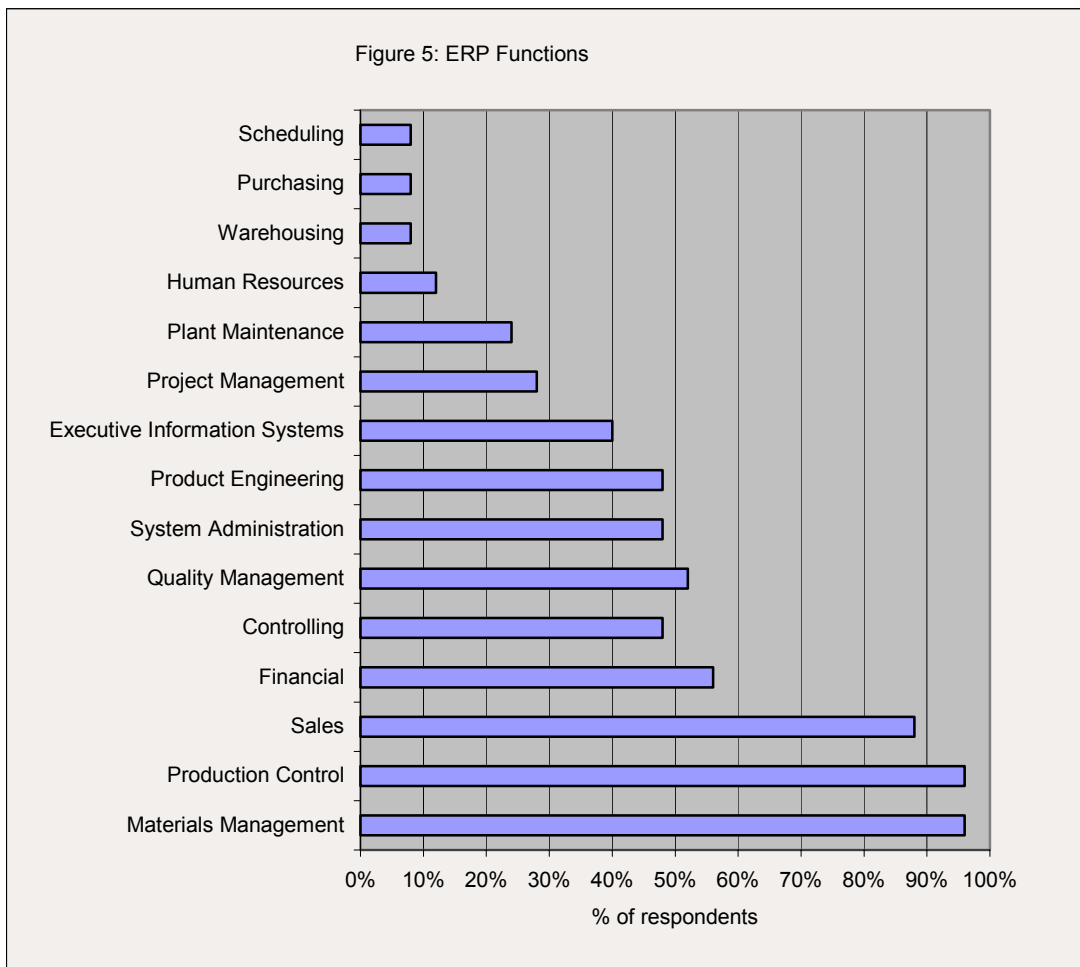

Figure 5: ERP Functions

Table 1 lists the ERP software packages used by the respondents and provides links to company's website. Datatex was the most frequently listed package. It is a software program designed for the textile industry while many of the other packages serve multiple industry segments. Three of the respondents had systems developed in house or used a best-of-breed approach combining modules of several vendors. A

comprehensive listing of ERP systems for many industries is found in [3] and a directory of ERP systems specific to textiles is available from APICS [4].

Table 1: ERP Software

Software Name	Website
ACS Optima	www.cgsinc.com/softwaresolutions/index.html
Bann	www.baan.com
BPCS	www.ssagt.com
Datatex	www.datatex-tim.com
Intenia MovexFashion	www.intentia.com/w2000.nsf/Index
J D Edwards	www.jdewards.com
PointMan	www.pivotpoint.co.uk
SAP	www.sap.com
SyteFashion	None found

Each respondent was able to list up to five factors they considered important in software selection. The most frequent responses could be summarized as: fit of the software to the textile and apparel industry, cost, support and maintenance, flexibility and functionality. Also, users want the software to integrate to specific systems, such as data collection, financials, and forecasting. Users also consider factor such as vendor stability, number of customers, and a proven record in textiles.

System Implementation
Respondents were asked what they thought were the main barriers to implementing an ERP system. The most frequently cite barriers were:
1. Resistance to change
2. Lack of top management support
3. User training & education

Some of the other issues that were mentioned included cost, having the right project team, lack of a clear view of the function of ERP, and that textiles does not follow and ERP business flow. Umble and Umble [5] describe 10 categories of ERP implementation failures which area as follows:
4. Poor leadership from top management

5. Automating existing redundant or non-value-added processes
6. Unrealistic expectations,
7. Poor project management
8. In adequate education and training
9. Trying to maintain the status quo
10. Mismatch between the system capabilities and the organizations processes and procedures
11. Inaccurate data
12. Implementation viewed as an IT project
13. Significant technical difficulties.

Textile ERP projects appear to have the same difficulties as all other ERP implementations. As stated in Bobbin magazine [6] both Pillowtex and Crown Crafts inc. had problems implementing their ERP systems.

As summarized in Figure 6 the median time to implement an ERP system was 12-18 months. Several of the respondents were still implementing their ERP system. Fifty-six percent of the systems were identified as being fully integrated and another thirty-two percent were labeled as being integrated within a business unit.
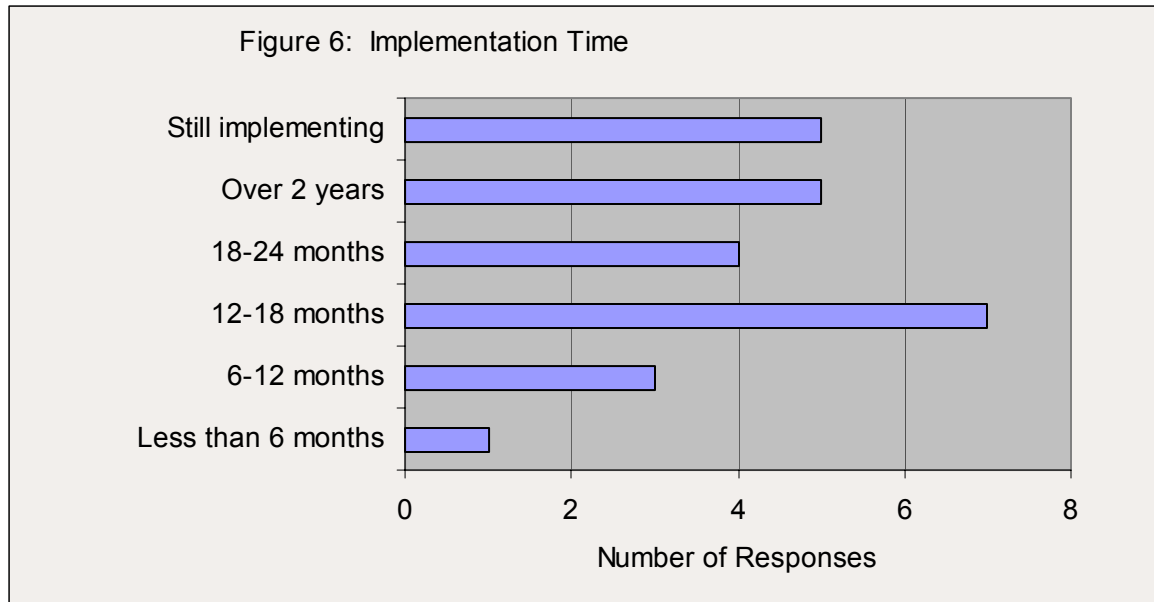
Figure 6: Implementation Time

Bar chart showing Number of Responses by implementation time:
- Still implementing: 5
- Over 2 years: 5
- 18-24 months: 4
- 12-18 months: 7
- 6-12 months: 3
- Less than 6 months: 1

X-axis: Number of Responses (0 to 8)

Table 2: Systems Linked to ERP

Function	Software	Website
Advanced Planning & Scheduling	i2 Manugistics	www.i2.com www.manugustics.com
Business Intelligence	Board	www.board.com
Customer Resource Management	Omina	
Financials & Accounting		
Forecasting	Futurion Demand Solutions	www.futurcast.com www.demandsolutions.com
Manufacturing Execution Systems	Camstar	www.camstar.com
Supply Chain Management	i2	www.i2.com

Linkages

As shown in Table 2 companies are linking their ERP systems functions beyond ERP. Vendors and websites are also listed in Table 2 where the respondents identified a specific software package.

Electronic Commerce

Companies were also asked about their use of electronic commerce applications. As shown in figure 7 companies are using conventional EDI, have websites, and have an intranet. They do not have an extranet or web based e-commerce. Table 3 lists some of the business-to-business textile exchanges. Less than 20% of the respondents traded in any of these exchanges. Also, since this survey was conducted many of these exchanges no longer exist.
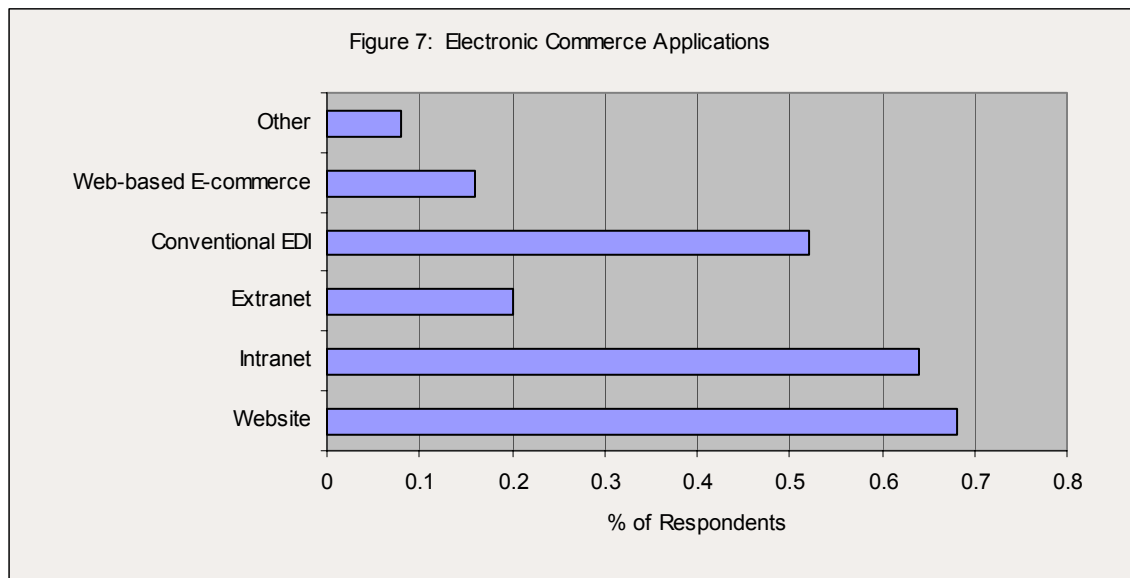
Figure 7: Electronic Commerce Applications

Table 3 Textile B2B

Name	Website
ATMI Auction site	BuyTextiles.com
TexTrade	
ClickTex	
Fabria Soft goods marketplace	Fabria.com
TextileGarment	
FiberDealer	

Conclusions

Textile companies are looking for ERP solutions to fit their specific needs. Both generic and textile specific packages have been utilized in the industry. The barriers to implementation in textiles seem similar to those in other industries. Electronic commerce in the form of traditional EDI, but not electronic marketplaces which have see lots of changes in the last year, is used by the textile industry.

Textile companies are looking to integrate their ERP systems with supply chain management and business intelligence systems. The Gartner group has now coined the phrase ERP II [7]. ERP II systems address the issues of sharing information across the supply chain with trading partners. It is expected that these systems will not be deployed till 2005; however, companies will move towards this new model. Software vendors will provide solutions for specific industries. What will be the textile specific requirements for these new ERP II systems?

Acknowledgement

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