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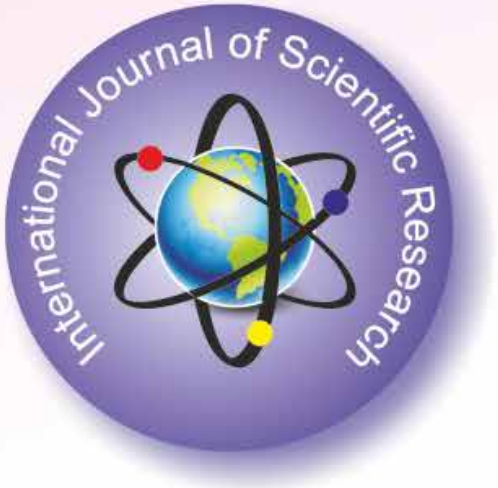

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Research Paper

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KEYWORDS :

Role of ICT in Automobile Industry

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Introduction

Information Technology is applied in the industries that produce the products (goods and services) that support the electronic display, processing, storage and transmission of information." Information technology includes all modes of information collection, processing, storage, and dissemination. The role of information technology (IT) in this process has never been in the foreground: it has always been infrastructural, making possible subtle but profound changes in nearly every aspect of the industry. IT has been profoundly important in the transformation of the automobile industry, but the process has been far more subtle and complicated than the rhetoric about the Internet and the Web suggests. Transformation has been a slow, infrastructural, accretionary process that has produced powerful cumulative effects. The industry made significant use of IT long before the era of digital computers or even electronic unit record equipment. In fact, the close association of information capability and the automobile industry began not long after the invention of Hollerith card sorting technology. The automobile industry coevolved with modern IT and in myriad ways incorporated that technology as it grew, so the full effects are difficult to spot because they are infrastructural and invisible. ICT has created a new channel of distribution and a variety of new entrepreneurs. not only has ICT made the idea of mass customisation a reality, but it has also summarily dismissed the notion of a "mass consumer segment" as outdated

Our focus is on embedded information capability. This means that the capability has evolved and been adopted and adapted to play vital roles in the automobile industry. Three kinds of capability are

(1) Enhanced product platforms,
(2) Production and distribution systems, and
(3) Use and service monitoring.

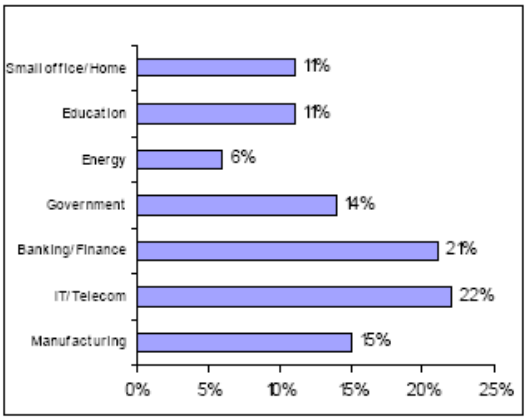
This analysis requires a broad view of both the automobile industry and IT. For our purposes, the industry includes all of the activities and infrastructure required to make automobile transportation possible. Beyond OEM (Original Equipment Manufacturers) and sales, this includes all of the tiers of supply in original production, and the servicing of automobile transport thereafter (fuel, insurance, streets/highways, regulation, resale, disposal). The modern digital technologies include manual methods that have been part of the industry from the earliest days.

Usage of ICT in everyday life

Factors	Usage	Examples
Education	Find useful information To manage books in the library	Internet Library automation system
Banking	To withdraw money Online banking	ATM machine to check Anytime & anywhere
Industry	Automobile manufacturing industry (Ex) car Aerospace research	Robotic & artificial intelligence High-tech-machine super computers
Commerce	Buying & selling something from internet For advertising For stock market	On-line payment billboard, Electronics media wise.

Indian IT Industry is growing rapidly and in 2005-06, IT service (excluding ITES) industry witnessed an excellent growth rate around 30%, out of which software export accounted for over 75.5% and the domestic market constituted the remaining 24.5%. Implementation of supply chain solution would streamline their business process. The manufacturers would be able to deliver their products faster to their suppliers and reduce the inventory carrying costs.

Sector wise usage of IT in India



Source: Cygnus Research

Usage of ICT in Automobile Industry

The automobile industry is often characterized in terms that limit the scope of discussion to the manufacture and sale of new automobiles. This panel broadens the scope to include the broad set of complements, enablers, and constraints that make the industry one of the largest and most influential human enterprises in history. The international automotive sector is undergoing profound change in two distinct areas:

- Supplier and customer collaboration and
- Telematics.

ICT is central to both thrusts and the Internet is the core technology that the industry is using to meet these needs.

I. Use and service monitoring

1. Property regulation,
2. Risk mitigation and
3. Complementary asset provision
4. Car and driver registration services,
5. Insurance
6. Atmospheric emissions control Embedded digital fuel and emission control systems
7. Passenger safety Air bag and collision detection systems

II. Enhanced product platforms

1. Entertainment,

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2. Conviviality, and control
3. Sound systems,
4. Hands-free phones,
5. Remote control
6. Expediting and coordinating
7. Production and distribution
8. MRP, ERP systems, supply-chain management (EDI, e-collaboration-markets)

III. Production and distribution systems

1. Manufacturer–customer relationship construction and maintenance
2. Car service history
3. Customer profiling/service (On-Star)
4. Intelligent service management

Application of ICT in Automobile Industry

The automotive industry is in general well equipped with information and communication technologies (ICT) infrastructure. However, the availability of internet access and the adoption of basic ICT applications still vary across size, classes. Sophisticated computer networks and broadband connections are more common in larger firms. Large enterprises in the automotive industry lead in using e-business technologies to automate business processes. The most frequently adopted technologies include

1. Enterprise Resource Planning (ERP),
2. Supply Chain Management (SCM) and
3. Collaborative design systems

Enterprise Resource Planning (ERP)

It makes analysis to mutual relationship and collaboration factors of enterprises internal departments and enterprise external organizations in R&D process. Only to put lean design thinking through the total product lifecycle from product conceptual design to the product after-sales service, could Indian automotive industry achieve the overall collaborative independent innovation.

Implementation of SAP DMS-CRM (Dealer Management System - Customer Relationship Management)

It is essential for Auto OEMs to keep in close contact with the end consumers, build brand loyalty and provide total customer experience. Implementation of centrally hosted Mahindra Dealer Management System (DMS) covers - Marketing, Pre-sales, Sales, Services, Spares, Warranty, Dealer Financials, Analytics, CRM and Business Intelligence. The pilot involving 50 dealer locations initiated last year is in the final phase of implementation, to be followed by roll-out across Mahindra Dealer Community. Appropriate infrastructure including dealer connectivity is being established.

Implementation of SAP DMS-CRM has provided an additional opportunity to ensure process standardization and compliance across all dealers of M&M. Enhanced the ability to integrate a change more easily across the entire dealer chain. It facilitated with better customer information management, end-customer database, along with seamless integration with back-end SAP systems.

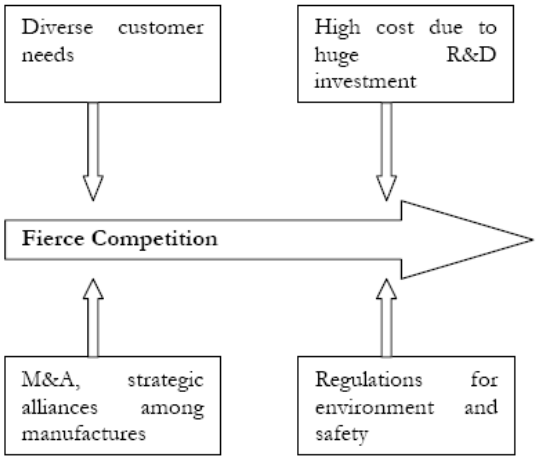
Supply Chain Management (SCM)

It shows the importance and role of ICT in logistics and supply chain. The role of ICT in supply chain has emerged as under:

1. Negotiating Multilateral trade agreements
2. Finalising Bi-lateral trade agreements
3. Expediting communications and transportation of data/information
4. Lowering the cost and time reduction.

Role of SCM in Automotive Industry

According to the Council of Logistics Management Supply Chain Management, "the process of planning, implementing and controlling efficient and cost effective flow of materials, in-process inventory, finished goods and related information from point-of-order to point-of-consumption, for the purpose of conforming to customer requirements as efficiently as possible".The automobile industry has undergone significant structural and other changes in the last decade or so. In view of the present globalisation, implementation of lean production and the development of modularisation have changed the relationships between automobile assemblers (OEMs) and their suppliers, especially those in the first tier. Stiff competition among manufacturers will result in more mergers or acquisitions. The challenges automobile manufacturers and suppliers face include improving quality, meeting cost reduction targets and developing time to market. Diverse customer needs High cost due to huge R&D investment M&A, strategic alliances among Manufactures Regulations for environment and safety



Benefits of SCM and IT

- Quicker response – improved professional service
- Timely product supplies
- Accurate pricing/discounts
- Reduction in billing errors – cleaner
- SOA
- Simplified and faster payments process
- Reduction in administration costs for customers/vendors
- Online information (purchases, sales, inventory, financials)
- Elimination of reconciliation of accounts/error processing
- Reduction in accounting cycle times
- Less duplication of job – utilization of human-power in value adding roles
- Reduction in paper flow, data processing, printing, mailing
- Better warehousing and transportation management
- Timely and correct asset capitalisation
- Credit management (customers)
- Better plant maintenance
- Easy access to data /information

Collaborative design systems

Collaborative software development model forms the foundation for a software product development. In the process of providing custom software development services using the collaborative software development model, we participate from concept validation stage through design and development, to packaging/ product launch. This service is further supported by allocation of dedicated resources till the software product stabilizes and if necessary, for future upgrades of the product. For instance Tata Technologies provides specialized engineering and design services, product lifecycle management and product-centric information technology services

The automotive industry predominantly uses EDI-based standards and proprietary standards to exchange data between companies. However, EDI applications that barely allow the exchange of data between systems hinder the diffusion of more flexible and open standards. In time, radically increased information sharing and distribution through e-collaboration platforms and improved effectiveness of the supply chain through integrated software platforms and deployment of intelligent RFID tags could have major impacts. CAD/CAM systems are being used as product life cycle management tools and integrated

into enterprise resource planning systems. Their significance lies in their ability to speed up the cycles between design and manufacturing and make product design increasingly collaborative and information intensive.

- Online procurement has become a part of everyday business and belongs to the most

frequently adopted e-business applications. However, online purchases are rather limited in terms of volume and, contrary to commonly held opinions, micro firms emerge as e-procurement leaders.

- Online market places play only a minor role in the sector, evidence presented in the case study on Supply On indicates that electronic market places slowly gain acceptance in the automotive industry.
- Online sales remain a niche application. Contrary to other e-business solutions implemented by firms in the automotive industry, small and medium-sized enterprises (SMEs) are the most frequent users of e-sales channels. Furthermore, volumes of online sales of SMEs are relatively higher than those of large firms. Large companies seem to use the web primarily as a sales supporting tool.

Thus, ICT-based innovations are equally attractive for both large and small enterprises.

- Network supply structures controlled by OEMs or large suppliers will affect the way of profit sharing between co-operating companies. Increasing standardisation and inter-operability of ICT systems would help to overcome some of the problems related to inter-firm integration.
- Legal barriers still constitute an important hurdle to e-business diffusion. As the cost of legal services is particularly high for SMEs, this might hamper the adoption of e-business among SMEs. The legal framework is highly developed at the European level, but the level of awareness of the contents of the law applicable in the national context remains low. Moreover, to deal with these challenges necessitates clear distinctions between real and perceived barriers in the legal field, i.e. within existing national legal and administrative practices. Thus, policy effort is still needed to raise awareness of existing regulations among companies and to ensure that the conditions of the legal framework governing electronic transactions do not constitute additional barriers for doing e-business, in particular for SMEs. Utilising simple and inexpensive applications can help SMEs to acquire the necessary expertise and know-how for using more advanced applications. Thus, it is important that small companies also have an understanding of e-business and are aware of the benefits it offers them.
- Increasing the awareness about the e-business potential and internet literacy remains an important challenge at both European and national level. ICT facilitates the integration of companies and the emergence of a network structures in the automotive value chain. Since the relationships between networked companies are different from market-type arrangements, the integration of supply chain raises issues that are also relevant for competition policy. The principal subjects of concern include the hold-up problem, protection of property rights on innovation created in the course of cooperation, and vertical restraints.

Conclusion

All automobile industries are using intensively ICT from the shop floor level to the design areas, and all of them are specialized in medium-high range car models, with increased technological practices based on quality control, intensive flows of information and communication, and leading networks of suppliers. The only visible change of importance for the industry due to the Internet and the Web has been the rise in information access for purchasers, which has eroded much of the traditional advantage in information asymmetry held by dealers. There is no sign of radical disintermediation and probably will not be as long as distribution regulations remain unchanged. The other major experiment to transform the industry by changing the supply chain (e.g., Covisint) has proved to be less significant than predicted.

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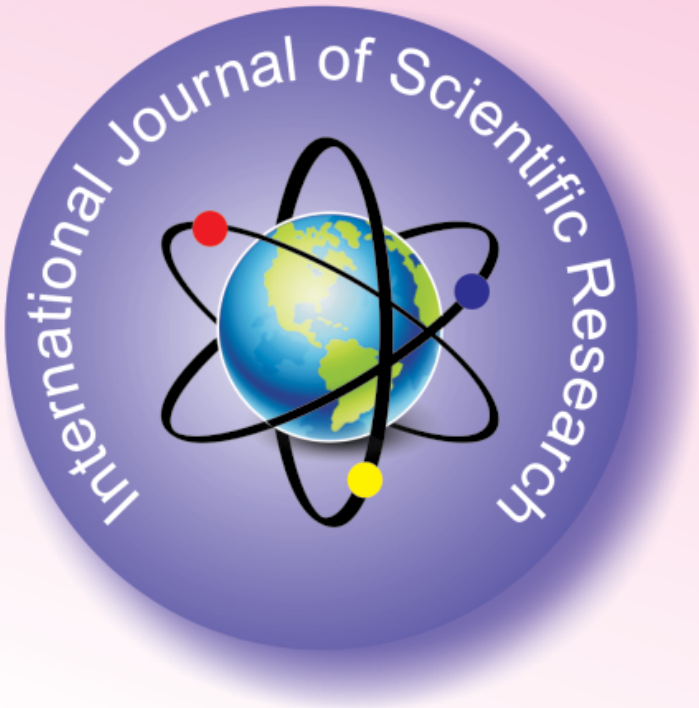

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