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E-commerce Implementations: A Comparative Study of Factors Between Various Sectors of Indian Industry

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It is now a well-chronicled fact that the Internet really took off with the development of the worldwide web (www). In less than a decade the Internet became one of the most outstanding technological development of the last century, penetrating every aspect of our personal lives as well as global commerce but few problems, some of huge proportions, have appeared in its wake. Many firms and entrepreneurs were attracted to B-to-B (Business- to-Business) e-commerce mostly by an over estimated marketing potential. But the scenario is slightly different today. Poorly planned e-disasters are the things of past, smart global companies are realizing that e-commerce offers cost-effective, time saving and low cost solutions in many functional areas.

E-commerce is commonly associated with buying and selling of information, products, and services via computer networks today and in the future via any one of the myriads of networks that make up the information superhighway (I-way)[4]. The key element of e-commerce is information processing. All steps of commerce except for production, distribution and delivery of physical goods are forms of information gathering, processing, manipulation and distribution, which computers and networks are perfectly suited to handle. This information processing activity is usually in the form of business transactions, for which several broad categories can be observed:

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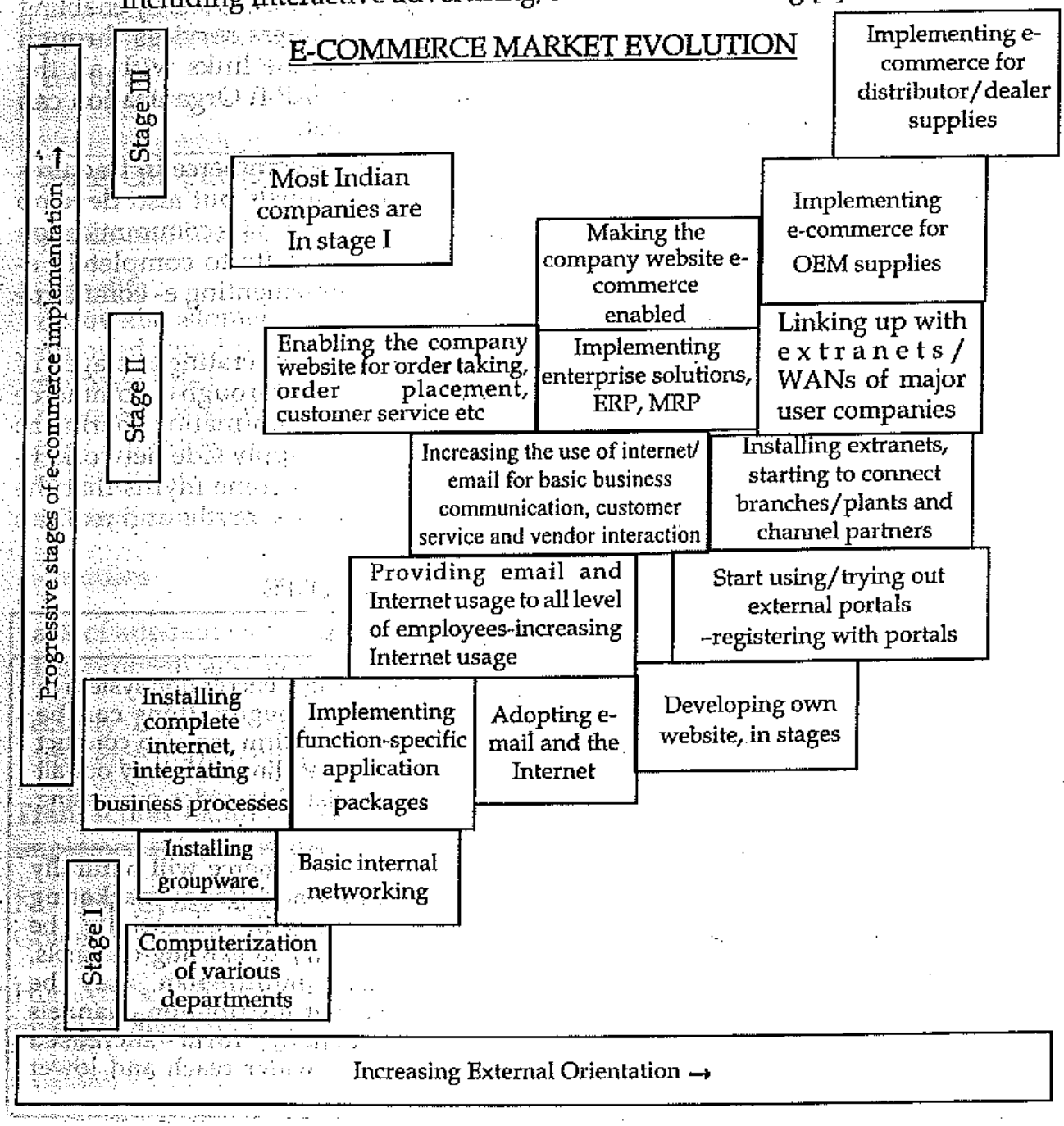
- Transactions between a company and the consumer over public networks for the purpose of home shopping or home banking encryption for security and electronic cash, credit or debit tokens for payment.
- Transactions with trading partners using EDI.
- Transactions for information gathering such as market research using barcode scanners, information processing for managerial decision making or organization problems solving, and information manipulation for operations and supply chain management.
- Transaction for information distribution with prospective customers, including interactive advertising, sales and marketing [3].



Stage 1: E- commerce applications have been divided primarily into three basic stages. At stage one organization set up the basic internal information that enable internal operations to be carried out using computer system. In addition connecting to Internet and providing Internet access to all employees in the organization for information access and mailing facilities help organization to develop basic aptitude for using these facilities for E- commerce purposes. Developing and keeping organization website for generating awareness and disseminating Information to larger audience simultaneously is another building block at this stage that can be used later on for e- commerce activities.

Stage 2: At this stage organization develop interlink ages with other stakeholders like distribution channel members customers and suppliers. This is done by enabling the organization website for order placement and customers services through interacting interfaces. Installing extranet to develop online links with all the stakeholders and using information systems driven by MRP II Organization can also register on external portals to increase visibility on net.

Stage 3: Organizations at this stage fully operationalize e- commerce in fractures and start using it not only to support physical flow channels but also develop processes that help carry out complete transactions using electronics communication systems. This is done by converting the organization website to completely e-enabled site ready for all kinds of transactions and by implementing e- commerce processes with suppliers and distributors.

Most of the Indian organization in manufacturing sector are operating at stage I of e-commerce process and therefore, hardly generate revenues through e- commerce root. In fact e- commerce infrastructure is used to facilitate information sharing as per requirements to support the present distribution and supply side network. E-commerce has not taken the firm roots in India because of some myths that the organizations believe to be true. The table below indicates the myths and realities of e- commerce [2].

E- COMMERCE: MYTH AND REALITIES

The Myth	The Realities
i) Online transactions and e-commerce will never take-off as the selling process on the net does not allow negotiations to be conducted.	i) With security/ encryption system in place, online negotiations can be confidential. A firm can also conduct negotiations off-line and carry out all activities related to order processing online.
ii) E-commerce will result in dis-intemediation. This will eventually result in a backlash from intermediaries/ channel partners.	ii) While e-commerce will naturally result in an additional marketing channel, it will essentially be complimentary to existing channels. Redundant middleman may be replaced, but distribution channels would benefit form increased efficiencies, wider reach and lower overheads.

iii) We have to implement ERP before we can think about e-commerce.	iii) Internal networking is necessary, but a full-fledged ERP system is not a prerequisite for e-commerce implementation. Companies that have basic legacy systems in their purchase and marketing divisions can short online activities.
iv) IT infrastructure is not in place and we are waiting for that to happen before we implement e-commerce.	iv) While last mile connectivity, bandwidth etc are still to develop to world standards, the internet can be leveraged with existing facilities for achieving significant operational efficiencies and improved marketing.

Source: Computers Today, March 2002 [8].

Benefits and hurdles of e-commerce

E-benefits

Improved customer service
Improved supply chain efficiency
Improved sales
Enhanced corporate image
Better import export options
Higher profits
Increased stakeholder value

E- hurdles

Lack of adequate infrastructure: Some CEOs considered bandwidth limitation the main problem, and most of them said infrastructure for e-commerce was inadequate.

Security: Lack of security for e-commerce was considered another bottleneck for e-commerce implementation.

Transaction facilities: These are not yet established in India for e-commerce implementation. Payment mechanisms are still in the initial planning stage only.

No clear cyber laws: Many CEOs said cyber laws, announced by the Indian Government are not clear and are insufficient for the growth of e-commerce.

High costs: CEOs were unanimous on the fact that e-commerce implementation involves high costs.

Customer and vendor readiness: Most customers and vendors are not ready for e-

commerce, even for the few companies implementing e-commerce. Channel partners, most of the suppliers and customers are not ready for e-commerce even though they are aware of e-commerce and its benefits [8].

Methodology

The Study: The study is exploratory in nature and was conducted on different sectors of Indian industry. Originally fifteen factors were listed as triggers to e- commerce implementation after reviewing the literature. The Industries selected for the study were Auto Components Industry, Building and Construction Materials Industry, Office Automation Industry, Packing Industry, Metal Industry, Indian Engineering Industry, Electrical and Electronics Industry, Chemical Industry, Pharmaceutical Industry and Logistics Industry, which are numbered in the table as Industries 1-10 in that order.

The Sample: The sample was drawn on random basis from all industrial units of all the sectors who have implemented e-commerce in India. Total 296 companies of different sectors were surveyed as shown in table 1. The survey was through telephonic interview and through e-mail.

The Tools

For Data Collection: data was collected by administering self-developed questionnaire. The questionnaire was pre tested on a small sample of 25 companies located in and around Indore. Split half reliability was computed on the data collected through pilot study and it was 87%. The reliability coefficient was 92%. The manufacturing units were provided the complete list of fifteen factors and were asked to select the most important factor that triggered the implementation of e-commerce in their organization.

For Data Analysis: Frequency table of responses on most important factor selected by manufacturing units was prepared sector wise after editing the data (table 1). As most of the respondents selected one of the four factors i.e. internally driven, customer driven, suppliers/ vendors driven, industry/competition driven and only one or two companies selected the other factors, therefore all other factors were grouped under others for the purpose of analysis. These factors for implementing e-commerce in any of the sector of Indian industry were numbered in the table as factors 1-5 in that order. Chi-Square test was applied between different industries on each factor and the results are shown in table 2.

Results and discussion

Table 1: Showing Frequency of Most Influencing Factors for Adopting E-Commerce

	Industries									
	1	2	3	4	5	6	7	8	9	10
*Factors	Frequency of selecting the factor as most important									
1	6	20	6	8	12	4	4	4	12	4
2	13	6	6	8	10	6	3	5	5	6
3	4	10	21	8	3	5	10	2	3	2
4	5	8	18	5	5	6	8	3	2	5
5	2	3	1	1	2	1	2	1	1	1
Total	30	47	52	30	32	22	27	15	23	18

*Factors are: 1. Internally Driven 2. Customer Driven 3. Suppliers/ Vendors driven 4. Industry/Competition Driven 5. Other factors Combined Together

Table 2: Showing Computed Chi Square Values Between Industries

Industry	1	2	3	4	5	6	7	8	9	10
	Chi Square Values									
1		8.59	25.36*	1.79	1.12	0.75	3.31	1.15	2.05	0.9
2			7.56	3.70	1.16	1.35	1.40	1.0	2.14	1.68
3				4.31	3.7	14.5*	1.94	1.65	100.1	1.45
4					3.55	0.31	1.49	1.13	3.05	0.81
5						5.63	6.74	1.22	4.25	.97
6							2.36	4.63	0.64	2.03
7								1.73	0.81	2.03
8									2.85	.48
9										4.54

* Chi Square table value at 5% level of significance and four degree of freedom= 9.49

The results table above indicates that Chi square values computed between the factors that were considered most important is significant only in two cases i.e. between Auto Component Industry and Metal Industry, between Metal Industry and Engineering and between Metal Industry and Pharmaceutical Industry. The Chi Square results computed between all other sectors are insignificant. These results

indicate that it is only Metal Industry that considers different factors that are deriving E-commerce implementations than the other sectors. It is also significant to note that overall all the manufacturing sectors in India consider that e-commerce implementation is basically internally driven (80). The next three factors i.e. customer driven, suppliers/ vendors driven and industry/competition driven were selected by almost equal number of manufacturing units as trigger to their e-commerce efforts (68 each). The group of factors, named as others in the study was selected by only 15 units. Thus it is clear that mainly there are only four factors that are considered as triggers for implementing e-commerce in their organization.

Discussions

Auto Components Industry

The Rs. 17,500 crore domestic Auto Components industry is rapidly transforming from a low-volume fragmented sector in almost complete isolation form world trends to a highly competitive industry characterized by usage of cutting-edge technologies. Approximately 43% respondents in the auto components industry responded that the decision to adopt e-commerce is customer driven. This was because of the fact that most of the automobile manufacturers are using e-commerce technologies to cut lead times, reduce cost and improve customer satisfaction and pressurize their suppliers as well to adopt these technologies to gain competitive advantage. Also auto components industry in India is looking forward to play an important role as suppliers to multinational companies having manufacturing facilities anywhere in the world necessitating adoption of e-commerce [6].

Building and Construction Materials Industry

The Rs. 2,10,000-crore building and construction industry in India is highly fragmented and complex. Technical innovations and e-commerce may not seem viable. But modern technology is already bringing higher efficiency and output. The fragmented nature, geographical spread and multiplicity of levels in the distribution structure for most products offers unique challenges and opportunities for e-commerce initiatives. E-commerce in the building material industry is still in the initial stages. A few big companies in related segments such as cement; paint and tiles have taken e-initiatives for handling customers in a better way. Approximately 42% of the respondents believe that their e-commerce initiatives are internally driven and not influenced by customers. Distribution channel members and suppliers (as indicated by approximately 20% respondents) too have significant impact on their e-commerce initiatives [6].

Office Automation Industry

The IT revolution has changed the office automation sector, with cutting edg

technology products making paper less offices and real time communication a reality. The Indian office automation industry has been quick to adapt to global trends, offering its customers a wide range of products. In the office automation industry, e-commerce implementation is either customer driven (40%)or based on internal considerations (36%). E-commerce is yet to generate any revenue but the industry is confident about the future [6].

Packaging Industry

The Rs. 10,500 crore Indian packaging industry has developed rapidly in recent years, driven by a host of factors such as the entry of multinationals in the food, cosmetics and beverages sectors, increasing competition, and a greater overall awareness of the importance of packaging. E-commerce is expected to play a significant role in the Indian packaging Industry. Most of the consumers in the packaging industry said that e-commerce adoption is equally driven by customers, internal factors and distribution channel members. Large consumers, especially in FMCG sector have started adopting e-commerce and in certain cases are forcing their packaging suppliers to follow the suit to integrate with their systems [6].

Metal Industry

The metal industry in general has been one of the early movers in e-commerce adoption. Only a small portion of respondents believed online transaction of metals cannot take-off, as online trading does not allow for negotiations. The most important rationale for implementing e-commerce were customer driven (38%) followed by internally driven (31%). Worldwide trading of the products, minimal differentiation and the need to retain customers through better service and faster transactions make e-commerce attractive [6].

Indian Engineering Industry

The Rs. 1,16,500 crore Indian engineering industry views e-commerce as a platform for interaction and information exchange. The most important benefit of e-commerce is the likely expansion in marketing reach. The secondary benefit stemming from the widened reach include pre-transaction and post transaction issues involving interaction and information exchange. The most important rationale for implementing e-commerce was both customer driven and industry/competition driven (28%). Respondents were unanimous in agreeing that there is a scope for selling their complete product portfolio or at least a part of it over the net [6].

Electrical and Electronics Industry

The implementation of e-commerce is expected to result in improved sales and consumer service through better information dissemination while negating the

threat from spurious parts. In the Electrical and Electronics industry, e-commerce implementation is suppliers/vendors driven (37%) followed by Industry/ competition driven (30%). The industry considers e-commerce as a part of a long-term strategy to minimize costs incurred in transaction processing. Firms are nearly unanimous in their perception that profitability improvements are likely to be significant through e-commerce [6].

Chemical Industry

For the Indian chemical industry e-commerce does not represent a paradigm shift, but is perceived to be another IT phenomenon that can be gainfully utilized to expand marketing coverage and achieve seamless information flow to enable faster decision making and customer service. Most of the companies perceive that e-commerce would improve supply chain efficiency and reduce marketing/ procurement costs. . The most important rationale for implementing e-commerce were customer driven (33%) followed by internally driven (26%)[6].

Pharmaceutical Industry

The Indian Pharmaceutical industry view e-commerce as a tool that would aid community building and to a smaller extent reduces costs to better supply chain management. It is expected to supplement the existing channels in use by the industry and most companies do not foresee substantial proportions of their revenues being generated through this medium. Companies are also using the medium in order to provide people with more information on diseases and the products used to cure them. Many companies target the influencers-physicians. Access to separate value added sections is made available to doctors upon registration on site. For example, Glaxo- SmithKline-Beecham offers in-depth research reports and studies on specific topics exclusively (for free) to the doctor community. The study shows that implementation of e- commerce is mainly internally driven (50%) followed by customer driven (22%)[6].

Logistics Industry

Logistics companies have been attracted by the coming of age of the internet as time to order and time to marketing became shorter and more efficient with more transactions taking place through the internet, it also meant that companies became more customer-oriented and their services more efficient. The Internet was also used for internal exchange of information through EDI (Electronic data interchanges). The e-commerce implementation in logistics industry is mainly customer driven (33%) followed by industry/competition driven (26%)[6].

Conclusion

The implementation of e-commerce in India is still very low which shows that India has still a long way to go. The basic and most important factors responsible for implementations of e-commerce have been discussed and compared for various Indian manufacturing organizations. The result shows that in most of the organizations the factors responsible for e-commerce implementation are either customer driven or internally driven. There are number of predictions, which highlights a generalized implication of e-commerce implementations. The range of possible implications as markets assimilate the opportunities afforded to them through e-commerce. It is clear from the analysis that Indian industry considered only four factors as triggers to their e-commerce efforts. Inter industry comparison brought out clearly that the Industrial sectors do not differ significantly with respect to their considerations regarding important triggers that kick started their efforts to implement e- commerce in their organizations. Only one industry i.e. metal industry considers factors that are significantly different than the other industries, and rightly so because they are suppliers to almost all the industrial sectors having mildly different considerations for implementing e-commerce. All these mild differences have added up to show significantly different considerations in implementing e-commerce by metal industry [1].

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