

Emerging Trends in E-Commerce

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Abstract: *Digital transformation in the retail industry is about implementing new technology to create better customer experiences, optimize business processes, enable retail workers, and build more agile, growth-oriented business models. According to the latest research from Gartner, more than 50% of all consumer spending will be done online in 2024 and 60% of it will be done through mobile devices. Only mobile-centric retailers who embrace the digital revolution will be the ones who thrive and grow*

Keywords: primary market

I. INTRODUCTION

WE are living in e-century. The Internet and information and communications technologies (ICT) are central to economic growth and productivity. Internet-based technologies and networks can increase productivity, decrease costs and open new market opportunities.

Now-a-days, using the Internet and email to conduct business is not uncommon. However, lack of technical and management skills in Information and Communications

Technology is a barrier. There are a wide variety of resources available to help you to improve your e-commerce skills. Simply, decide what skills you need and identify the appropriate resources to help you to build those skills.

The skills that may be required range from basic abilities, like word processing and Internet navigation, to more complex capabilities such as designing and building websites and database management.

There are a range of resources to help you broaden your understanding of the ecommerce environment and develop your technical skills. These include online resources, books and magazines, seminars and training courses.

Keeping this in mind, a summary on the background of Electronic Commerce is being provided.

E-Commerce: Meaning

E-Commerce or Electronics Commerce is a methodology of modern business which addresses the need of business organizations, vendors and customers to reduce cost and improve the quality of goods and services while increasing the speed of delivery. E-commerce refers to paperless exchange of business information using following ways.

- Electronic Data Exchange (EDI)
- Electronic Mail (e-mail)
- Electronic Bulletin Boards
- Electronic Fund Transfer (EFT)
- Other Network-based technologies

The concept of e-commerce is all about using the internet to do business better and faster.

E-commerce is the process of buying and selling over the Internet, or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer-mediated network without using any paper document.

Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. It also pertains to “any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact.”

Business transacted through the use of computers, telephones, fax machines, barcode readers, credit cards, automated teller machines (ATM) or other electronic appliances without the exchange of paper-based documents. It includes procurement, order entry, transaction processing, payment authentication, inventory control, and customer support.

E-commerce is subdivided into three categories: business to business or B2B (Cisco), business to consumer or B2C (Amazon), and consumer to consumer or C2C (eBay) also called electronic commerce.

E-commerce the phrase is used to describe business that is conducted over the Internet using any of the applications that rely on the Internet, such as e-mail, instant messaging, shopping carts, Web services, UDDI, FTP, and EDI, among others.

A type of business model, or segment of a larger business model, that enables a firm or individual to conduct business over an electronic network, typically the internet. Electronic commerce operates in all four of the major market segments: business to business, business to consumer, consumer to consumer and consumer to business.

Ecommerce has allowed firms to establish a market presence, or to enhance an existing market position, by providing a cheaper and more efficient distribution chain for their products or services.

Examples of E-Commerce

- An individual purchases a book on the Internet.
- A government employee reserves a hotel room over the Internet.
- A business calls a toll free number and orders a computer using the seller's interactive telephone system.
- A business buys office supplies on-line or through an electronic auction.
- Retailer orders merchandise using an EDI network or a supplier's extranet.
- A manufacturing plant orders electronic components from another plant within the company using the company's intranet.
- An individual withdraws funds from an automatic teller machine (ATM).
- Accepting credit cards for commercial online sales
- Driving information through a company via its intranet
- Driving manufacturing and distribution through a value chain with partners on an extranet
- Selling to consumers on a pay-per-download basis, through a Web site, etc

E-Commerce Definitions

The definition of e-commerce includes business activities that are business-to-business (B2B), business-to-consumer (B2C), extended enterprise computing (also known as "newly emerging value chains"), d-commerce, and m-commerce.

Ecommerce is simply a part e-business, more specifically, the trading aspect of e-business.

Although there are many definitions and explanations of e-commerce, the following definition provides a clear distinction. There are many definitions and understanding about ECommerce.

They are as follows:

1. According to the editor-in-chief of International Journal of Electronic Commerce, Vladimir Zwass, 'Electronic commerce is sharing business information, maintaining business relationships and conducting business transactions by means of telecommunications networks'.
2. Electronic Commerce is where business transactions take place via telecommunications networks, especially the Internet – E. Turban, J. Lee, D. King and H.M. Chung,
3. Electronic commerce is about doing business electronically – P. Timmers
4. Electronic commerce or e-commerce refers to a wide range of online business activities for products and services – Anita Rosen
5. It pertains to "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact." – MK, Euro Info Correspondence Centre (Belgrade, Serbia),
6. E-commerce is usually associated with buying and selling over the Internet, or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer-mediated network. – Thomas L. Mesenbourg
7. A more complete definition is: E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation

between or among organizations, and between organizations and individuals. – Emmanuel Lallana, Rudy Quimbo, Zorayda Ruth Andam, ePrimer

From your reading it should be apparent to you that electronic commerce is more than online shopping.

E-Commerce – Features

Electronic commerce, or e-Commerce, refers to the purchasing and selling of goods or services via electronic means, such as the Internet or mobile phone applications. It may also refer to the process of creating, marketing, servicing and paying for services and goods. Businesses, governments and the public can participate in e-Commerce transactions. The following discussion will elicit the unique features of e-commerce. The unique features of e-commerce technology include:

Ubiquity:

e-Commerce is ubiquitous, It is available just about everywhere and at all times by using internet and Wi-Fi hotspot such as airport, coffee cafe and hill station places.. Consumer can connect it to the Internet at any time, including at their homes, their offices, on their video game systems with an Internet connection and mobile phone devices. E-Commerce is ubiquitous technology which is available everywhere Moreover, individuals who have cell phones with data capabilities can access the Internet without a Wi-Fi connection.

Global reach:

The potential market size is roughly equal to the size of the online population of the world. E-Commerce Technology seamlessly stretches across traditional cultural and national boundaries and enables worldwide access to the client. E-Commerce website has ability to translate the multilingual websites as well as allow the access to visitors all over the world, purchase products and make business interactions.

Universal standards:

The technical standards of the Internet are shared by all of the nations in the world. The whole online tradition are growing and expanding their features in the world. To development any kind of business need Internet and communication application which make the business relationship more lovingly and attractive for secure business and successful business.

Richness:

Users can access and utilize text messages and visual and audio components to send and receive information. An individual may see information richness on a company's blog if a post contains a video related to a product and hyperlinks that allow him to look at or purchase the product and send information about the post via text message or email.

Interactivity

E-commerce technologies allow two-way communication between the merchant and the consumer. As a result, e-Commerce technologies can adjust to each individual's experience. For example, while shopping online, an individual is able to view different angles of some items, add products into a virtual shopping cart, checkout by inputting his payment information and then submit the order.

Personalization:

Technologies within e-Commerce allow for the personalization and customization of marketing messages that groups or individuals receive. An example of personalization includes product recommendations based on a user's search history on a Web site that allows individuals to create an account.

Information density:

The use of e-Commerce reduces the cost to store, process and communicate information, At the same time, accuracy and timeliness increase; thus, making information accurate, inexpensive and plentiful. For example, the online shopping process allows a company to receive personal, shipping, billing and payment information from a customer all at once and sends the customer's information to the appropriate departments in a matter of seconds.

Social technology:

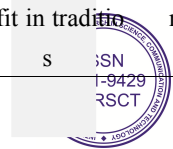
E-Commerce technology has tie up the social media networking application to provide the best source of content sharing technology and e-Marketing systems. You can share your content or data easily in just one click.

User-Generated Content:

Social networks use e-Commerce technologies to allow members, the general public, to share content with the worldwide community. Consumers with accounts can share personal and commercial information to promote a product or service. When a company has a professional social networking account, a member of the same social network has the option of associating himself with the company or a product by saying he likes or recommends it. When an individual updates his status on a social networking account, he may also mention a product or company by name, which creates word-of-mouth advertising.

Differences between Traditional Commerce and E-Commerce

Point of Difference	E-commerce	Traditional Commerce
Cost Effective	E-commerce is cost effective. The cost incurred on middlemen is eliminated as there is direct link between the business and the customers. . The total overhead cost required to run ebusiness is comparatively less. Running an ebusiness require only a head office. Overhead cost can be eliminated by hosting a website.	Cost has to be incurred for the role of middlemen to sell theess compan 's products. The total overhead cost l of more. Running a traditional busin require a head office with seve branches to cater to the needs customers situated in different places.
Time	A lot of valuable time for both the consumers and business is saved. A product can be ordered and the transaction can be completed in few minutes through internet.	It takes a lot of time to complete a transaction.
Convenience	It provides convenience to both customers and business. It provides better connectivity for its prospective and potential customers as the website can be accessed virtually from anywhere, anytime through internet. It is not necessary to move away from their work place or home to locate andpurchase a desired product.	It is not so convenient method as that of ve E-commerce. Customers have to moto away from their home or work place locate and purchase a desired product.
Accessibility	It is easy to expand the size of the market from regional to international level. By hosting a website, a business can penetrate into global market. It is quite easy to attract customers from global markets at a marginal cost.	It may not be easy to expand the sizeof nal the market from regional to ratio oer level. Business organizations have incur a lot of expenses to en international market.
Introduction of new product	It is easy to introduce a product on the Website and get the immediate feedback of the customers. Based on the response, the products can be redefined and modified for a successful launch.	It takes a lot of time and money to introduce a new product and analyse t e most ot response of the customers. Initially, force has to be incurred to carry out pi surveys to understand the taste of t customers.
Profit	It helps the organization to enjoy greater profits by increasing sales, cutting cost and streamlining operating processes.	The cost incurred on the middlem n, overhead, inventory and limited sal pulls down the profit in traditio nal commerce.



Physical Inspection	It does not allow physical inspection of goods.	It is possible to physically inspect goods before the purchase.
Time	Round the clock service is available.	Business is open only for a limited time.
accessibility		
Product suitability	It is not suitable for perishable goods and high value items such as jewellery and antiques. It is mostly suitable for purchasing tickets, books, music and software.	It is suitable for perishables and 'touch and feel' items.
Human resources	It requires technically qualified staff with an aptitude to update themselves in the ever changing world. It has difficulty in recruiting and retaining talented people.	It does not have such problems associated with human resources.
Customer interaction	The interaction between the business and the customer is screen-to-face.	The interaction between the business and the consumer is a face-to-face.
Process	Automated processing of business transactions helps to minimize the clerical errors.	There are chances of clerical errors to occur as there is manual processing of business transactions.
Business relationship	Business relationship is characterized by end-to-end.	Business relationship is vertical linear. or
Fraud	Lot of cyber frauds take place in e-commerce transaction. People generally fear to give credit card information. Lack of physical presence in markets and unclear legal issues give loopholes for frauds to take place in e-business transactions.	Fraud in traditional commerce is comparatively less as there is personal interaction between the buyer and the seller.
Information sharing	Little dependency on person to person information exchange. It provides a universal platform to support business activities across the globe.	Heavy dependency on information exchange from person to person. No uniform platform for information sharing as it depends heavily on personal communication.
Method of Communication	Communication can be done in asynchronous way. Electronics system automatically handles when to pass communication to required person or do the transactions.	Communication is done in synchronous way. Manual intervention is required for each communication or transaction.
Strategy	A uniform strategy can be easily established and maintained.	It is difficult to establish and maintain standard practices.

- Every page should have an H1 tag around what is the focus of the page, such as a product name, category name, or static content title. Use H2 tags as well for other important page sections.
- Keywords in optimized page titles.
- Internal linking. Link keywords in your unique content to pages related to that keyword. This is huge!!!
- Friendly URLs with related phrases. E.g. When talking about Zobrist's eZcommerce solution, the URL looks like this: http://www.zobristinc.com/our_solutions/eZ_Commerce/

b) Selecting New Products

- Sell what the customer wants to buy, not what you want to sell! This is a common mistake, especially when merchandisers are given a great price to sell a particular product. If nobody wants to buy that product, it doesn't matter what price you set it at.
- Find out what customers want. What is your value proposition on products you sell?
Capitalize on your niche!

c) Merchandising New Productions

- Pictures, pictures, pictures! It is very important to have high quality images of the products.
- Hero photos: if you have a big seller, feature it on a category page with a hero image of the product.
- Promote latest releases in your newsletters and feature them in categories or on your homepage.
- Market to customers who have purchased related items in the past.

d) Customer Service Make your customers happy.

- Delivery orders on time.
- Ensure order accuracy.
- Reship promptly if a package was failed to be delivered to the customer, if it came damaged, or if it was missing parts.
- Don't try to save every penny on an order. You may need to take a loss to make a customer happy in order to retain their loyalty to you, and therefore be very valuable for many orders to come.

e) Monitoring your KPIs / Analytics

- Monitor your analytics reports. View what items are selling and bubble them to the top of product listings so customers can find them easier. A great tool for this, if you are on IBM WebSphere Commerce, is our Smart Merchandiser product. With it, you can see analytic overlays on each product in each category to help you make smart merchandising decisions.
- Tackle cart abandonment. Remarket those products to the customers if you have their email addresses. Incentivize them to complete their checkout within X days.

Scope of E-Commerce

Today, online shopping is a reality in India. The market place is flooded with several ecommerce options for shoppers to choose from. In the recent past, the growth of e-commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for online businesses in the future if they understand the Indian shopper's psyche and cater to their needs. Listed below are the reasons that guarantee the future prospect of E-commerce in India.

- Enhancing domain registrations
- Rising internet users
- Easy access to internet
- Awareness about internet even in rural areas
- Rising number of cyber cafes
- Growing need for E-commerce

a) Cash on delivery (COD)

Indian e-commerce industry has evolved over a period of time with innovations that have changed the rules of the game globally. COD is one such example. In a country where credit card penetration is much lower than other developed markets and where e-commerce companies are still working hard to build trust among shoppers, introducing cash on delivery has been one of the key factors for the success of the segment. At present, COD is the preferred payment mode for close to 55-60% of all online transactions in the fashion and lifestyle segment in India. Executing COD efficiently and painlessly for the customer is critical to the success of any ecommerce player in the country.

b) Delivering experiences

E-commerce needs to focus on customer experience to build trust and confidence. Customer experience encompasses every interaction of a customer from placing an order to interacting with customer service team, to the actual delivery experience. Providing a great delivery experience is one of the core aspects to delighting customers. This not only mean faster deliveries but also consistency and reliability. The more faith the customer has in your delivery service, the more likely he is to buy again. Besides, it builds a good brand image and word-of-mouth publicity.

c) Growing the base

India has more than 130 million online users at present, out of which as many as 10% are engaging in online transactions. The online user base is expected to cross 300 million in the next 2 – 3 years and a larger percentage of people are expected to transact online by the end of 2015. This large base will provide vast scope for e-commerce businesses to establish themselves in India.

d) Growing opportunities

The e-commerce industry is growing at a rapid pace and changing the dynamics of the retail industry. In the coming years, e-commerce is expected to contribute close to 8-10% of the total retail segment in India. This growth is bound to continue provided e-commerce companies focus on innovating, building strong technology infrastructure and delivering the best customer experience.

e) Online Travel Segment

The online travel segment has seen a CAGR of 55.5% from 2007-2012. The is due to rise of disposable income, surge in demand for domestic travel and the boom of the tourism industry. Domestic travel contributed to as much as 50% of the total market, followed by railways tickets, international air tickets, hotel bookings and bus tickets.

f) E-Tailing

E-tailing encompasses buying consumer items like apparels, electronic devices, home and kitchen appliances, jewellery, online. Competition is intense due to low entry barrier of this segment. However, Amazon.com, flipkart, snapdeal.com, jabong.com, and myntra.com are some of the major players. This segment is expected to grow further as people become more pressed for time. Also the choice that e-tailing sites offer to customers will drive demand for this segment. However, there will be intense price based competition in this sector and consolidations are in the order.

g) Online Financial Services

The financial services segment includes applying for insurance, paying online bills, and premiums and online transactions for financial services. The costs of these insurance policies are lesser with premiums being 40%-60% cheaper. This is a win-win situation for both the insurance provider and the customers. Also the convenience provided by online portals has led to more customers choosing the online route for bill payment.

h) Classifieds

It is in a very promising stage and has lot of scope for growth. Online advertising is lot cheaper than conventional methods and unlike the latter, it is not constrained to a geographic location. The growth is mainly fuelled by services like online job (60% of the segment), online matrimony, B2C classifieds and B2B classifieds. Naukri.com, timesjob.com, monster.com are the major players in the job market while jeevansathi.com, shaadi.com are the major matrimonial sites.

i) Other online Services

These include sites offering online services like buying entertainment tickets, food and grocery.

Benefits and limitations of E-Commerce

Benefits of E-Commerce

Electronic commerce can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world. A firm can use electronic commerce to reach narrow market segments that are geographically scattered. The web is particularly useful in creating virtual communities that become ideal target markets for specific types of products or services. A virtual community is a gathering of people who share a common interest, but instead of this gathering occurring in the physical world; it takes place on the internet.

Some key benefits of e-commerce are summarized below:

- By becoming e-commerce enabled, businesses now have access to people all around the world. In effect all e-commerce businesses have become virtual multinational corporations.
- The cost of creating, processing, distributing, storing and retrieving paper-based information has decreased.
- The pull-type processing allows for products and services to be customized to the customer's requirements.
- Enables reduced inventories and overheads by facilitating 'pull'-type supply chain management – this is based on collecting the customer order and then delivering through JIT (just-in-time) manufacturing.
- The Internet is much cheaper than value added networks (VANs) which were based on leasing telephone lines for the sole use of the organization and its authorized partners. It is also cheaper to send a fax or e-mail via the Internet than direct dialing.
- Software and music/video products can be downloaded or e-mailed directly to customers via the Internet in digital or electronic format.
- Businesses can be contacted by or contact customers or suppliers at any time.
- 24/7 access: Enables customers to shop or conduct other transactions 24 hours a day, all year round from almost any location.
- Customers not only have a whole range of products that they can choose from and customize, but also an international selection of suppliers.
- Customers can 'shop' around the world and conduct comparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared (for example www.moneyextra.co.uk for financial products and services).
- This can range from the immediate delivery of digitized or electronic goods such as software or audio-visual files by downloading via the Internet, to the on-line tracking of the progress of packages being delivered by mail or courier.
- An environment of competition where substantial discounts can be found or value added, as different retailers view for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price.
- Enables more flexible working practices, which enhances the quality of life for a whole host of people in society, enabling them to work from home. Not only is this more convenient and provides happier and less stressful working environments, it also potentially reduces environmental pollution as fewer people have to travel to work regularly.
- Enables people in developing countries and rural areas to enjoy and access products, services, information and other people which otherwise would not be so easily available to them.
- Facilitates delivery of public services like health services available over the Internet (online consultation with doctors or nurses), filing taxes over the Internet through the Inland Revenue website.
- A business can reduce the costs of handling sales inquiries, providing price quotes, and determining product availability by using electronic commerce in its sales support and order-taking processes.
- Electronic commerce provides buyers with a wider range of choices than traditional commerce.
- Electronic commerce provides buyers with an easy way to customize the level of detail in the information they obtain about a prospective purchase.

- Electronic payments of tax refunds, public retirement, and welfare support cost less to issue and arrive securely and quickly when transmitted over the internet.
- Electronic payments can be easier to audit and monitor than payments made by cheque, providing protection against fraud and theft losses.
- Electronic commerce can also make products and services available in remote areas.

Limitations of E-Commerce

- Most of the disadvantages of e-commerce stem from the newness and rapidly developing pace of the underlying technologies. Some of the key disadvantages of are given below:
- Return-on-investment is difficult to calculate.
- Many firms have had trouble recruiting and retaining employees with the technological, design, and business process skills needed to create an effective electronic commerce presence.
- Difficulty of integrating existing databases and transaction-processing software designed for traditional commerce into the software that enables electronic commerce.
- Many businesses face cultural and legal obstacles to conducting electronic commerce
- Lack of sufficient system security, reliability, standards and communication protocols.
- Rapidly evolving and changing technology, so there is always a feeling of trying to ‘catch up’ and not be left behind.
- Under pressure to innovate and develop business models to exploit the new opportunities which sometimes leads to strategies detrimental to the organization. The ease with which business models can be copied and emulated over the Internet increases that pressure and curtails longer-term competitive advantage.
- Facing increased competition from both national and international competitors often leads to price wars and subsequent unsustainable losses for the organization.
- Problems with compatibility of older and ‘newer’ technology. There are problems where older business systems cannot communicate with web-based and Internet infrastructures, leading to some organizations running almost two independent systems where data cannot be shared. This often leads to having to invest in new systems or an infrastructure, which bridges the different systems. In both cases this is both financially costly as well as disruptive to the efficient running of organisations.
- Computing equipment is needed for individuals to participate in the new ‘digital’ economy, which means an initial capital cost to customers.
- A basic technical knowledge is required of both computing equipment and navigation of the Internet and the World Wide Web.
- Cost of access to the Internet, whether dial-up or broadband tariffs.
- Cost of computing equipment. Not just the initial cost of buying equipment but making sure that the technology is updated regularly to be compatible with the changing requirement of the Internet, websites and applications.
- Lack of security and privacy of personal data. There is no real control of data that is collected over the Web or Internet. Data protection laws are not universal and so websites hosted in different countries may or may not have laws which protect privacy of personal data.
- Physical contact and relationships are replaced by electronic processes. Customers are unable to touch and feel goods being sold on-line or gauge voices and reactions of human beings.
- A lack of trust because they are interacting with faceless computers.
- As people become more used to interacting electronically there could be an erosion of personal and social skills which might eventually be detrimental to the world we live in where people are more comfortable interacting with a screen than face to face.
- There is a potential danger that there will be an increase in the social divide between technical haves and have-nots – so people who do not have technical skills become unable to secure better-paid jobs and could form an underclass with potentially dangerous implications for social stability.

- Reliance on telecommunications infrastructure, power and IT skills, which in developing countries nullifies the benefits when power, advanced telecommunications infrastructures and IT skills are unavailable or scarce or underdeveloped.
- As new technology states how do you dispose of all the old computers, keyboards, monitors, speakers and other hardware or software?
- Facilitates Just-In-Time manufacturing. This could potentially cripple an economy in times of crisis as stocks are kept to a minimum and delivery patterns are based on pre-set levels of stock which last for days rather than weeks.

The Internet and India

Before the appearance of VSNL's GIAS, Internet had been in India for many years in the form of ERNET. However, it was not possible for many people to get access to it, as it was meant for only the educational and research communities.

Educational Research Network (ERNET)

Internet in India was established as ERNET. It was a joint undertaking of the Department of Electronics (DOE) of the Government of India, and the United Nations Development Program (UNDP), which provides technical assistance to developing nations. ERNET is one of the most successful operations that UNDP has funded.

Gateway Internet Access Service (GIAS)

On August 15th 1995, Videsh Sanchar Nigam Limited (VSNL) -- the Indian international trunk telephone carrier company -- launched the Gateway Internet Access Service (GIAS).

Subsequently, 6 nodes were established at Mumbai, Delhi, Madras, Calcutta, Bangalore and Pune. Each GIAS node is connected to Internet via high speed MCI circuits having a bandwidth of approximately 10 Mbps.

Users in remote areas of India can reach GIAS service via I-NET. The Department of Telecommunication (DOT) has a wide-spread network in India called I-NET, which has direct connectivity to each GIAS node.

Timeline Chart The timeline chart showing the development of Internet in India is given below:

1986: ERNET project starts up; email exchange using UUCP protocol established between

National Centre for Software Technology, Bombay, and IIT Bombay

1987: Email exchange between ERNET institutions in metros; TCP over X.25 established between the ERNET gateway at NCST and internet via CWI in Amsterdam

1988: Leased lines used to connect ERNET partner institutions to ERNET gateway in Bombay

1989: LWBBS (Live Wire BBS) and BBS CiX launch online services; VSNL commissions a Gateway Packet Switching System (GPSS) running X.25 protocol; ERNET acquires an analog leased line operating at 9600 bps to connect ERNET gateway at NCST, Bombay, to UUNET in the US

1990: TCP/IP implemented for communication between ERNET centres connected by leased lines 1991: LWBBS turns into a paid subscription service and expands to other cities such as Ahmedabad, Madras (Chennai), Pune, Calcutta (Kolkata), Baroda, Vapi

1992: Business India launches aXcess, a value-added service offering email as well as e-news, stock quotes

1994: ERNET establishes a hub in Bangalore to provide TCP/IP-level connectivity over satellite links to locations otherwise unreachable by dedicated circuits

1995: VSNL introduces public internet access in India via dialup services in 6 cities on August 15, 1995; India World portal launches on March 13

1996: Major newspapers such as The Times of India, The Hindu, The Indian Express and Hindustan Times set up websites; Rediff.com launched; India's first cyber cafe launched in Mumbai 1997: Tamil newspaper Dinamani sets up website; Hotmail creator Sabeer Bhatia sells Hotmail to Microsoft for \$400 million; first online banking site launched by ICICI Bank; Naukri.com launched; IndusInd also launches website; Khel.com cricket site launched

1998: Private ISPs allowed to set up internet infrastructure; LWBBS's Pune node, JabberWocky operated by WMI becomes the first ISP licensee; Sify becomes India's first national ISP license holder; first major hacking case

(teenagers hack data on BARC's servers); launch of NASSCOM to promote IT industry by efforts of Dewang Mehta; cyber cafes start mushrooming across Indian cities; annual India Internet World conference series starts in Pragati Maidan

1999: IndiaWorld sold to Sify for US\$115 million (Rs 499 crore) triggering the dotcom boom in India; WebDunia, India's first and most successful Hindi portal, launched; large number of dotcoms appear, mostly modelled as e-marketplaces but have untested revenue models and big spends; Sify sets up hundreds of public internet kiosks under the brand name i-Way; New Telecom Policy 1999 launched by DoT; India ISPs allowed to set up satellite international gateways; India Info portal launched

2000: Parliament passes Information Technology Act 2000; foreign portals like Yahoo and MSN set up Indian sites; Baze.com launched based on the eBay model; Indya.com launched with Rs

4.5 crore campaign blitz; birth of online journalism: Tehelka.com exposes cricket betting scandal; ITC launches e-Choupal initiative to take the internet to villages; Raitel Corporation of India launched; NSE launches online stock trading; cable internet starts replacing dialup connections; 2000: Rediff IPO on NASDAQ; Sulekha.com legal entity founded in Austin, Texas

2001: Subscription sites set up by thenewspapertoday.com and NaiDunia.com; Times of India group launches 8888 mobile service; India Today group launches 2424 mobile service; first cyber crime-related arrest (two arrested for hacking go2nextjob.com); Indian Railways launches online ticketing site (irctc.com) which soon becomes India's largest e-revenue earner; India's first cyber crime police station opens in Bangalore; Dotcom bubble bursts -- many sites close, some go into hibernation; C-DAC announced the launch of its Multilingual Advanced News Automation System: MANAS; GAIL India launched; Andhra Pradesh state government launches e-procurement portal and extends public internet kiosk facility to every mandal office

2002: Malayalam Varikha.com, the website of weekly Malayalam magazine, launches paid site; NPTEL (National Programme on Technology Enhanced Learning) initiative launched; India's first teleradiology company Teleradiology Solutions launched; Indian ISPs allowed to set up submarine international gateways; Wikipedia.org adds Assamese, Punjabi, Nepali, Oriya, Malayalam content 2003: Air Deccan launches India's first online air ticketing site; NIXI (National Internet Exchange of India) set up; WiFi (2.4GHz) deregulated by GoI; official representation from India's DoT and DIT at WSIS 2003 in Geneva; AirTel launches broadband internet access; Wikipedia.org adds Bhojpuri, Marathi, Kannada, Hindi, Kashmiri, Tamil, Telugu, Gujarati, Sanskrit, Sindhi content

2004: DoT declares its Broadband Policy; BSNL introduces broadband; eBay buys Baze.com; Monster.com buys Jobsahead.com; NIXI takes over management of the .IN Registry; ITC eChoupal demonstrates rural internet adoption; Google starts India office; Wikipedia.org adds Bengali, Urdu content; Sulekha starts Hindi operations; Ebay India CEO arrested for alleged sale of porn online, but later released -- the arrest is criticised by industry

2005: Social networking sites like Orkut make their presence felt; online registration of .IN domains begins; Indic language user interface appears on basic cell phones

2006: Facebook makes India debut; OneIndia.in portal launched; national E-Governance Plan launched; Naukri.com IPO in India

2007: Major media websites switch to tab-based design; Arzoo.com re-launched as a travel portal by Sabeer Bhatia; Twitter makes its India debut; Google News launches Hindi service

2008: India sets a world record by sending 10 satellites into orbit in a single launch; Apple iPhone debut in India; Internet Governance Forum (IGF) held in India; Google News launches in Tamil, Malayalam, Telugu

2009: GoI puts forth the draft policy on Indian language IDNs

2010: 3G spectrum auctioned by telecom players after two-year-long process; WiMax licenses auctioned; GoI announces National IPv6 Roadmap; TRAI releases National Broadband Plan; MakeMyTrip lists on NASDAQ at over US\$1 billion; Facebook overtakes Orkut in India

2011: Mobile number portability launched; ICANN approves 7 Indian language Internationalised Domain Names (IDNs) for India; iPad enters India market after its Dell and Samsung rivals; Pearson Group takes controlling stake in e-education startup TutorVista; Indian government launches National Knowledge Network (NKN); India internet startups Komli Media, LetsBuy.com bag \$21 million venture capital deals; India's 2011 census uses social media; IIT courses, lectures made available online