SVKM'S NARSEE MONJEE COLLEGE OF COMMERCE AND ECONOMICS

Department of Mathematics, Statistics and Computers.

There are two kinds of statistics, the kind you look up and the kind you make up. Rex Stout, *Death of a Doxy*

If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is. ~John Louis von Neumann

Science Daily

Better way to make sense of 'Big Data?'

February 18, 2014

Big Data is everywhere, and we are constantly told that it holds the answers to almost any problem we want to solve. Companies collect information on how we shop, doctors and insurance companies gather our medical test results, and governments compile logs of our phone calls and emails. In each instance, the hope is that critical insights are hidden deep within massive amounts of information, just waiting to be discovered. But simply having lots of data is not the same as understanding it. Increasingly, new mathematical tools are needed to extract meaning from enormous data sets. In work published online today, two researchers at Cold Spring Harbor Laboratory (CSHL) now challenge the most recent advances in this field, using a classic mathematical concept to tackle the outstanding problems in Big Data analysis.

What does it mean to analyze Big Data? A major goal is to find patterns between seemingly unrelated quantities, such as income and cancer rates. Many of the most common statistical tools are only able to detect patterns if the researcher has some expectation about the relationship between the quantities. Part of the lure of Big Data is that it may reveal entirely new, unexpected patterns. Therefore, scientists and researchers have worked to develop statistical methods that will uncover these novel relationships.

In 2011, a distinguished group of researchers from Harvard University published a highly influential paper in the journal Science that advanced just such a tool. But in a paper published today in *Proceedings of the National Academy of Sciences*, CSHL Quantitative Biology Fellow Justin Kinney and CSHL Assistant Professor Gurinder "Mickey" Atwal demonstrate that this new tool is critically flawed. "Their statistical tool does not have the mathematical properties that were claimed," says Kinney. Kinney and Atwal show that the correct tool was hiding in plain sight all along. The solution, they say, is a well-known mathematical measure called "mutual information," first described in 1948. It was initially used to quantify the amount of information that could be transmitted electronically through a telephone cable; the concept now underlies the design of the world's telecommunications infrastructure. "What we've found in our work is that this same concept can also be used to find

patterns in data," Kinney explains. Applied to Big Data, mutual information is able to reveal patterns in large lists of numbers. For instance, it can be used to analyze patterns in data sets on the numerous bacterial species that help us digest food. "This particular tool is perfect for finding patterns in studies of the human microbiome, among many other things," Kinney says. Importantly, mutual information provides a way of identifying all types of patterns within the data without reliance upon any prior assumptions. "Our work shows that mutual information very naturally solves this critical problem in statistics," Kinney says. "This beautiful mathematical concept has the potential to greatly benefit modern data analysis, in biology and in biology and many other important fields.

Story Source:
The above story is based on materials provided by **Cold Spring Harbor Laboratory**. *Note: Materials may be edited for content and length.*
Journal Reference:
1. J. B. Kinney, G. S. Atwal. **Equitability, mutual information, and the maximal information coefficient**. *Proceedings of the National Academy of Sciences*, 2014;
http://www.sciencedaily.com/releases/2014/02/140218185128.htm 2/2/2015

India to change the way it measures economic growth

Central Statistics Office to measure growth by gross value-added at basic prices, instead of by GDP at factor cost

Thu, Jan 29 2015

This is the most comprehensive review of the GDP measurement, including the sources of data, ever undertaken, said Pronab Sen, chairman of the National Statistical Commission. Photo: Ramesh Pathania

New Delhi: In a major overhaul of the way India's gross domestic product (GDP) is calculated, the Central Statistics Office will start measuring the country's economic growth by gross value-added (GVA) at basic prices, replacing the practice of measuring it by GDP at factor cost.

The new measurement under the new base year of 2011-12, replacing 2004-05, will be released on 30 January for three years to 2013-14.

This is the most comprehensive review of the GDP measurement, including the sources of data, ever undertaken, said **Pronab Sen**, chairman of the National Statistical Commission.

The new method was recommended by the United Nations System of National Accounts in 2008 and will make India's GDP growth numbers comparable with that of developed nations.

GVA at basic prices will add the net of production taxes and subsidies to GDP at factor cost. While the change in base year is likely to lead to a higher GDP, the impact of the measurement change is unclear.

Stamp duties and property taxes are part of production taxes in India, while subsidies to labour, capital and investment such as apprentice subsidies and interest subsidies constitute production subsidies.

The Indian economy grew at 6.7%, 4.5% and 4.7% during 2011-12, 2012-13 and 2013-14 fiscal years, respectively. Sen said that along with GVA at basic prices for these three years, revised measurements for GDP at factor cost will also be provided in the appendix for historical comparison. Providing GVA growth rates at basic prices historically for earlier years may take longer, he said.

The statistics department will release the advance estimates of the economy for 2014-15 along with the fiscal third quarter data on 9 February.

The change in base year is being done in accordance with the recommendation of the National Statistical Commission, which had advised to revise the base year of all economic indices every five years. The new base year has been selected in line with the latest quinquennial round of employment-unemployment survey.

The new 2011-12 series will incorporate results of the recent national sample surveys such as enterprise survey (2010-11), employment unemployment survey (2011-12), all India debt and investment survey, situation assessment survey of farmers and survey on land and livestock holdings (2013). It will also take into account the population census (2011), agriculture census (2010-11) and livestock census (2012).

The statistics department will also release Consumer Price Index (CPI) for January with a new base of 2012 next month. The GDP data revision will also incorporate the new CPI instead of the current practice of using CPI for various groups such as agricultural labourers and industrial workers. The new series of Index of Industrial Production and Wholesale Price Index are likely to be released by March 2016.

The change in base year of national accounts statistics will result in an increase in the size of the economy in 2013-14 to `111.7 trillion as against the earlier estimate of `105.4 trillion, said **Devendra Kumar Pant**, chief economist and senior director (public finance) at **India Ratings**.

“The 2013-14 fiscal deficit and current account deficit are likely to decline to 4.3% of GDP (4.6% earlier) and 1.6% of GDP (1.7% earlier), respectively,” he said.

India Ratings expects the economy to reach $3 trillion by 2019-20 with the change in base to 2011-12, it said in a statement. On the 2004-05 base, it would have happened a year later in 2020-21.

“Of the last three base year changes, while the size of economy changed significantly in two cases, it did not change much in one case. The growth impact of a base year change both in India and recently in UK has been minimal,” the rating agency said. “The reason for the increase in size of the economy is the usage of more up-to-date information for these estimations.”

Strengthen your math skills to earn, save and invest more

NUMBER GAME

AMBARISH DATTA

We welcome your comments at mintmoney@livemint.com

Across the globe, financial markets have been a long standing indicator of the overall economic development of the country. Stable and mature markets create efficient capital raising opportunities for companies and also assist in channelizing domestic savings into capital formation, fuelling a nation's growth. Though the Indian capital markets have evolved dramatically over the past two decades, retail participation remains at an abysmally low 6%. At the same time, participation in high-yield investment programme and other Ponzi schemes (these promise unsustainably high returns on investments by paying previous investors with the money invested by new investors) continues to be high and rampant all over the country. This indicates that there isn't lack of money but there is lack of mathematical skills to evaluate investment options and arrive at an intelligent investment decision.

These decisions do not require complex mathematical knowledge but basic knowledge of percentage and interest calculations that we have learnt at the school level. Why does this happen? Why do even well educated people understand so little about mathematics, resulting in innumeracy or the inability of people to understand numbers, statistics and probabilities?

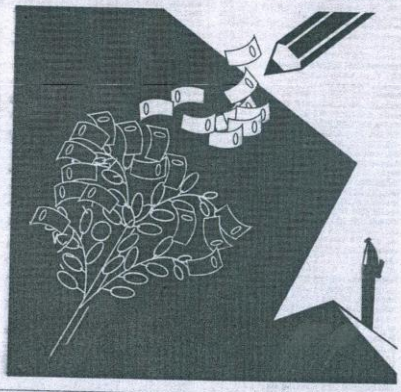
Cost of innumeracy

Our inability to deal rationally with very large numbers and probabilities associated with them results in misinformed government policies, confused personal decisions and an increased susceptibility to pseudoscience of all kinds.

Most of us often find mathematics too abstract and missing linkages to day-to-day problems. But mathematics is a fundamental human activity—a way of making sense of the world. Children possess a natural curiosity and interest in mathematics, and come to school with an understanding of mathematical concepts and problem-solving strategies that they have discovered through exploration of the world around them. Yet, for many adults, the "sense making" of mathematics is lost.

Every day mathematics is not about complicated equations, rather it means calculating things such as interest rates, discounting offers, price comparisons, and so on. However, what we learn in school does not link to this. It's been found that people with poor mathematical skills are more likely to be behind with their mortgage payments and have their home repossessed, according to a study. It showed that the risk of defaulting on a mortgage is directly linked to a home owner's mathematics skills and could explain the mortgage defaults in the recent global crisis. Lorenz Goette, the author of the study, urged lenders to offer "mortgage counselling" to those who struggled with mathematical skills.

One of the key reasons for this widespread innumeracy is that there are some misconceptions around learning mathematics as a key skill, including that mathematics is a matter of computation. Another problem is the way mathematics is taught in schools and colleges.



What can we do to change? Make the subject more interesting. Include activity based learning for mathematics, and link it to everyday life. Embed it in even subject to help establish its everyday applicability. Don't give up on the subject thinking the skill is beyond reach. "I'm not a math person" is a commonly heard comment, especially among parents. Although there might be some parents, like me, who find mathematics tedious, there are others who are good at it. Just as we would encourage improving writing skills even though every student doesn't aspire to be a novelist, mathematics has to be encouraged throughout our learning process. Most importantly, grooming and development of mathematics teachers who are passionate about the subject as a life skill is needed.

Numeracy skills are a must-have today for all trades, including managerial jobs. Poor numeracy skills lead to poor decision making, makes organizations lose millions and lose business opportunities. Numeracy, digital and language skills are the passport to success in this new age.

Good mathematics techniques can develop skills such as:

* Preparedness to understand the implications of attitudes toward money;
* Understanding financial data discussed in news;
* Being able to observe and evaluate the use of money;
* Exploring a variety of ways to make money, invest, save, spend and also give away; and
* Calculate returns and risks for every investment opportunity

A basic awareness itself can encourage everyone to use mathematics for day-to-day tasks—knowing returns in financial savings schemes, understanding retail discount offers, gauging risks for abnormally high returns products, and much more. Just this awareness can be a huge boost to channelizing our household savings into productive capital and could wean investors away from dubious, high-risk Ponzi schemes.

The fact is that mathematics is all around us. And it is a great defence against the sharks, cowboys and liars who want your vote, your money or your life. Being literate in numeracy skills is no longer a choice but a necessity.

Ambarish Datta is managing director and chief executive officer, BSE Institute.

Disclaimer: The articles and data in Mint Money aim to help readers with their money-related decisions. Each person will have a unique solution that would fit his personal situation, and we advise you to work with a certified financial planner before you buy a financial product.

Magic Square

The birthdate of Srinivasan Ramanajun is 22nd Dec 1887. ie., 22+12+18+87=139.

22	12	18	87
88	17	9	25
10	24	89	16
19	86	23	11

Ramanajun's magic square

1) Sum of any row is 139.
2) Sum of any column is 139.
3) Sum of any diagonal is 139.
4) Sum of corners is 139.
5) Sum of adjacent boxes is 139.
6) Sum of middle boxes is 139.

Examples of other Magic Squares are:

20	10	19	92
93	18	7	23
8	22	94	19
20	91	21	9

1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1

TRY THIS:

There is a 10 digit number. The first digit (left most) in the number tells us the number of zeroes in the number. For example if the first digit is 3 it implies there are three zeroes in the number. The second digit tells us the number of ones in the number, similarly the third digit tells us the number of twos in the number and so on… the tenth digit tells us the number of nines in the number. Find the 10 digit number.

Index Number

No. 18: Consumer Price Index (Base: 2010=100)												
Group/Sub group	2013-14			Rural			Urban			Combined		
	Rural	Urban	Combined	Nov. 13	Oct. 14	Nov. 14	Nov. 13	Oct. 14	Nov. 14	Nov. 13	Oct. 14	Nov. 14
	1	2	3	4	5	6	7	8	9	10	11	12
1 Food, beverages and tobacco	138.8	138.0	138.6	146.3	151.6	151.9	144.3	149.5	149.2	145.7	150.9	151.0
1.1 Cereals and products	132.8	131.9	132.6	135.0	142.3	142.5	133.0	138.8	138.8	134.5	141.4	141.5
1.2 Pulses and products	118.2	115.2	117.3	119.3	126.3	127.0	115.4	125.2	127.0	118.1	126.0	127.0
1.3 Oils and fats	143.9	141.9	143.2	145.5	145.9	145.9	142.1	137.8	137.4	144.4	143.3	143.2
1.4 Egg, fish and meat	143.1	146.8	144.4	144.2	153.1	153.6	146.6	156.2	156.0	145.0	154.1	154.4
1.5 Milk and products	144.2	139.0	142.3	146.4	159.7	160.8	141.3	155.2	156.8	144.5	158.0	159.3
1.6 Condiments and spices	134.3	132.9	133.9	135.9	143.6	144.3	133.9	152.8	153.9	135.3	146.3	147.1
1.7 Vegetables	161.5	157.5	160.3	212.6	195.7	194.3	207.6	180.6	174.5	211.0	190.9	188.0
1.8 Fruits	155.8	147.2	152.1	163.7	184.6	186.0	147.0	169.5	167.4	156.5	178.1	178.0
1.9 Sugar etc	109.5	105.0	108.2	110.1	110.5	109.8	104.8	106.4	104.7	108.6	109.3	108.3
1.10 Non-alcoholic beverages	135.0	136.9	135.8	137.0	143.5	144.0	137.9	145.3	147.1	137.4	144.3	145.3
1.11 Prepared meals etc	135.0	137.9	136.4	137.1	145.0	145.8	139.5	149.0	149.9	138.3	146.9	147.8
1.12 Pan, tobacco and intoxicants	143.5	147.8	144.7	145.4	154.6	155.3	148.9	163.0	164.7	146.4	156.9	157.9
2 Fuel and light	136.9	133.9	135.7	139.2	143.4	144.2	134.8	137.7	138.5	137.5	141.2	142.0
3 Housing	--	133.5	133.5	--	--	--	135.0	145.2	145.7	135.0	145.2	145.7
4 Clothing, bedding and footwear	144.1	144.2	144.1	146.3	156.8	157.5	146.2	154.0	154.6	146.3	155.8	156.5
4.1 Clothing and bedding	144.8	146.0	145.2	147.1	157.7	158.5	148.1	156.1	156.8	147.5	157.1	157.9
4.2 Footwear	140.0	133.8	137.7	142.0	151.5	151.7	135.1	141.2	141.8	139.5	147.8	148.1
5 Miscellaneous	128.8	125.0	127.1	130.7	136.2	136.5	126.2	131.5	131.3	128.6	134.0	134.1
5.1 Medical care	124.0	122.6	123.6	125.5	131.9	132.8	123.2	128.7	129.2	124.7	130.8	131.6
5.2 Education, stationery etc	125.7	126.9	126.4	127.7	134.9	135.5	128.6	138.4	138.5	128.2	136.8	137.1
5.3 Recreation and amusement	121.2	113.3	116.4	122.3	126.8	127.4	114.5	119.4	119.9	117.6	122.3	122.9
5.4 Transport and communication	131.0	125.3	127.8	132.7	137.2	136.7	126.4	128.8	127.5	129.1	132.5	131.5
5.5 Personal care and effects	126.2	121.6	124.3	127.6	134.3	135.1	122.3	130.3	130.9	125.4	132.7	133.4
5.6 Household requisites	134.1	127.5	131.4	137.2	139.4	138.8	129.3	133.7	133.9	134.0	137.1	136.8
5.7 Others	145.8	148.4	146.9	148.8	159.8	161.2	150.2	162.4	163.6	149.4	160.8	162.2
General Index (All Groups)	136.4	133.3	135.0	141.7	147.2	147.5	136.4	142.7	142.8	139.4	145.2	145.5
Source: Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India.												

Prospects of E-Commerce in India

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Abstract

E-Commerce has unleashed yet another revolution, which is changing the way businesses buy and sell products and services. . E-commerce stands for electronic commerce and pertains to trading in goods and services through the electronic medium. India is showing tremendous growth in the Ecommerce. The low cost of the PC and the growing use of the Internet is one of reasons for that.

There is a growing awareness among the business community in India about the opportunities offered by eCommerce. The future does look very bright for ecommerce in India with even the stock exchanges coming online providing a online stock portfolio and status with a fifteen minute delay in prices. . In the next 3 to 5 years, India will have 30 to 70 million Internet users which will equal, if not surpass, many of the developed countries.

1. Introduction

As a symbol of globalization and in many ways its leading feature, e-commerce represents the cutting edge of success in this digital age. E-commerce stands for electronic commerce and pertains to trading in goods and services through the electronic medium, i.e. the Internet or phone. On the Internet, it pertains to a website, which sells products or services directly from the site using a shopping cart or shopping basket system and allows credit card payments. It involves conducting business with the help of the electronic media, making use of the information technology such as Electronic Data Interchange (EDI). In simple words, Electronic commerce involves buying and selling of goods and services over the World Wide Web. Customers can purchase anything right from a car or a cake sitting comfortably in his room and gift it to someone sitting miles apart just by click of a mouse.

2. Scope of e-commerce

India is showing tremendous growth in the Ecommerce. Rival tradeindia.com has 700,000 registered buyers and it has the growth rate of 35% every year which is likely to double in the year 2010. Indiamart.com claims revenues of Rs. 38 crores and has a growing rate of 50 every year. It receives around 500,000 enquiries per month. Undoubtedly, with the middle class of 288 million people, online shopping shows unlimited potential in India. The real estate costs are touching the sky. The travel portals' share in the online business contributed to 50% of Rs 4800 crore online market in 2007-08. The travel portal MakeMyTrip.com has attained Rs 1000 crores of turnovers which are around 20% of total e-commerce market in India. Further an annual growth of 65% has been anticipated annually in the travel portals alone.

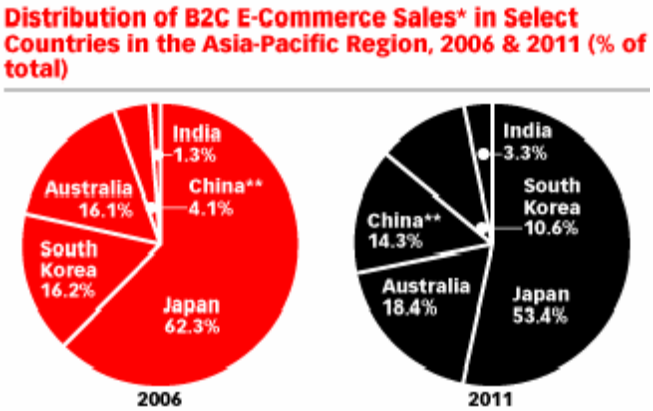
3. Growth of e-commerce

B2C E-Commerce Sales* in Select Countries in the Asia-Pacific Region, 2006-2011 (bilions)

	2006	2007	2008	2009	2010	2011
Australia	$9.5	$13.6	$20.4	$26.4	$28.7	$31.1
China**	$2.4	$3.8	$6.4	$11.1	$16.9	$24.1
India	$0.8	$1.2	$1.9	$2.8	$4.1	$5.6
Japan	$36.8	$43.7	$56.6	$69.9	$80.0	$90.0
South Korea	$9.6	$10.9	$12.4	$14.0	$15.9	$17.9
Asia-Pacific	**$59.1**	**$73.3**	**$97.7**	**$124.1**	**$145.5**	**$168.7**

*Note: converted at average annual exchange rates (projected for future years); total B2C e-commerce sales include all purchases made on a retail Web site, regardless of device used to complete the transaction; *includes online travel, event ticket and digital download sales; **excludes Hong Kong*
Source: eMarketer, January 2008

Figure 1: Sales of selected countries in Asia-Pacific



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Source: eMarketer, January 2008

Figure 2: Graph of Sales in selected countries

During the year 2000-2001, two major Industry Associations produced separate reports on e-commerce in India. One was prepared by the National Committee on Ecommerce set up the Confederation of Indian Industry (CII), while the other was commissioned by the NASSCOM and prepared by the Boston Consulting Group. Both the reports are optimistic about the growth of e-commerce in India. The Confederation of Indian Industry (CII) report estimates the volume of e-commerce to grow to Rs 500 billion (US$ 10.6 billion) in the year 2003. The *NASSCOM-BCG Report*, on the other hand, estimates for the same year that the total volume of ecommerce will be Rs 1,950 billion (US$ 41.5 billion).

Amul, a milk cooperative, is successfully using ecommerce to deepen its brand loyalty. Likewise, corporate in the automotive sector are improving their customer relations through this medium. Some of the new names that are rediscovering e-commerce through new portals at relatively low capital cost, without venture capital funding include: Key 2 crorepati, Music Absolute, Gate 2 Biz. The low cost of the PC and the growing use of the Internet has shown the tremendous growth of Ecommerce in India, in the recent years. According to the Indian Ecommerce Report released by Internet and Mobile Association of India (IAMAI) and IMRB International, " The total online transactions in India was Rs. 7080 crores (approx $1.75 billion) in the year 2006-2007 and expected to grow by 30% to touch 9210 crores (approx $2.15 billion) by the year 2007-2008. According to a McKinsey-Nasscom report the e-commerce

transactions in India are expected to reach $100 billion by the 2008. Although, as compared to the western countries,

India is still in is its initial stage of development. E-Marketer forecasts that online sales will more than double by reaching $168.7 billion in 2011. market share is moving toward Australia, India and especially China. China's share of regional B2C e-commerce will grow more than threefold from 4.1% in 2006 to 14.3% by 2011.

At the low end, South Korea's B2C e-commerce sales will grow by 13.3% over the same period. Between 2006 and 2011, the aggregate CAGR for the five countries will be 23.3%. Fig. 1 sales of selected countries in Asia Pacific Online travel is the largest e-commerce sales category in most major countries. For the same group of five countries, plus New Zealand, online leisure and unmanaged business travel sales totaled about $17.7 billion in 2007 and are forecast to rise to $41.7 billion by 2011. E-Marketer forecasts that from 2006 to 2011 online travel sales will grow at a 24.8% annual rate, higher than the 23.3% rate for B2C e-commerce. This indicates that travel is one of the key drivers of e-commerce sales in the APAC region. Fig. 2 Graph of sales in selected countries In China and India, online-travel spending drives B2C commerce sales, and it accounts for a majority of total sales. Consumers are less wary of buying services like train or airline tickets online, and sellers can avoid the logistics and delivery problems associated with physical goods. Jeffrey Grau, senior analyst at e Marketer, said that such preferences underscore how e-commerce in the region has a vast amount of growth ahead. E-commerce in these markets will have come of age when consumers start buying more expensive, high-touch categories such as apparel, home furnishings and jewelry.

4. Status of e-commerce in India

Today E-commerce is a byword in Indian society and it has become an integral part of our daily life. There are websites providing any number of goods and services. Then there are those, which provide a specific product along with its allied services Multi-product e-commerce- These Indian E-commerce portals provide goods and services in a variety of categories. To name a few: Apparel and accessories for men and women, Health and beauty products , Books and magazines, Computers and peripherals, Vehicles, Software, Consumer electronics, Household appliances, Jewelry, Audio/video, entertainment, goods, Gift articles, Real estate and services Single-product e-commerce Some Indian portals/websites deal in a specialized field, for example:

a) *Automobiles*- On these sites we can buy and sell fourwheelers and two-wheelers, new as well as used vehicles, online. Some of the services they provide are: Car research and reviews, Online evaluation, Technical specifications, Vehicle Insurance, Vehicle Finance.
b) *Stocks and shares and e-commerce*- In India today, we can even deal in stocks and shares through e-commerce. Some of the services offered to registered members are: Online buying/selling of stocks and shares, Market analysis and research, Company information, Comparison of companies, Research on Equity and Mutual Funds.
c) *Real estate and e-commerce*- They provide information on new properties as well as properties for resale. One can deal directly with developer through consultant. Allied services: Housing Finance, Insurance companies, Architects & Interior Designers, NRI services, Packers & Movers.
d) *Travel & tourism and e-commerce*- India has a rich history and heritage and e-commerce is instrumental, to a large extent, in selling India as a product, encouraging Indians as well as foreigners to see its multifaceted culture and beauty. The tourist destination sites are categorized according to themes like: Adventure - trekking, mountain climbing etc, Eco-Themes pertains to jungles, flora and fauna.

e) *Gifts and e-commerce-* In the bygone days, one had to plan what to gift a loved one, trudge across to your favorite shop, and browse for hours before purchasing a gift. The gifts are categorized as: Collectibles like paintings and sculptures, Luxury items like leather goods, perfumes, jewelry boxes, etc, household curios and carpets, etc, Toys & games, Chocolates, Flowers, Woodcraft & metal-craft.

f) *Hobbies and e-commerce-* The most popular hobbies from time immemorial are reading, music and films. The books cover a wide range of topics like Business, Art, Cookery, Engineering, Children's Stories, Health, Medicine, Biographies, Horror, Home & Garden, etc.

g) *Matrimony and E- commerce-* It is said that marriages are made in heaven, but in the world of E-commerce they are made on marriage portals One can search for a suitable match on their websites by region of residence (India or abroad), religion or caste. Allied services for registered members: Astrological services, Information on Customs and Rituals, Legal issues, Health & Beauty, Fashion & Style, Wedding Planners.

h) *Employment and e-commerce-* Two major portals like www.Monsterindia.com and www.naukri.com (meaning job.com in Hindi) are instrumental in providing job seekers with suitable employment at the click of a mouse. The service for job seekers is free and for Employers they charge a nominal fee. Jobs are available online in fields ranging from secretarial to software development, and from real estate to education.

5. Facilitators of e-commerce in India

A. Information directories: The products and services are listed with appropriate sub-headings to make it easy for a serious information-seeker to find what he wants. Allied services provided by them: Message boards, chat rooms, forums, etc.

B. Banks:

1) Net banking/phone banking: This is an online banking facility available for savings account holders as well as current account holders. Some of the special Net banking services are: Demat accounts for sale/purchase of stocks and shares, Foreign Exchange services, Direct/Instant payment of bills on the account-holder's behalf, Financial Planning & advice, Electronic Funds Transfer, Loans to account-holders.

2) Credit/Debit Cards- Banks facilitate E-commerce by providing the most vital trade instrument, namely the Credit or Debit Card, without which E-commerce would be impossible.

6. List of Top E-Commerce Companies of India

1) ASA Systel Communications Pvt Ltd: It is a leading E-commerce company in India which provides innovative and superb quality web services which encompasses the building of e-commerce related websites and portals. The company also uses the latest payment modes and security. The company has its offices in Chennai, Lucknow and will shortly set up offices in Delhi, Mumbai, Kathmandu, Bhopal.

***2)* Candid Info:** This Indian E-commerce company is based in New Delhi. It is a renowned Offshore Outsource Web designing development e-commerce Company. It offers off shore web development, designing, and SEO solutions for large corporations and SME's.

3) Chenab Information Technologies Private Limited: This E-commerce company in India comprises of web enabled business and web bases services, airline and security systems by using the internet technologies and tools of the state of the art. The company has three Software Development centers in Mumbai and the overseas branch office in New York. It is the first software company across the globe to get the certification of ISO 9001:2000.

4) Euro link Systems Limited: This leading E-commerce company provides consulting and e-business solutions, FlexTCA Systems, Trillium Protocol services to the global community. The company has its office in England, U.S, Switzerland, and India with about 200 employee strength.

5) HashPro Technologies: It offers e-business and traditional analysis, development, implementation, design and strategic planning. It is a leader in the provider of integrated talent management software organization in India. It is key technology consulting provider. It renders services like the E-commerce Hosting, Internet Marketing and Human Resources. The e-Workforce initiative of the company will enable the company to become a 100 percent e-Corporation.

6) Compare Info Base: The company is leading provider of e-commerce portals and IT solutions. The company manages about 1500 websites and portals with 4000 domain names. It has web presence in Maps, SoftwareDevelopment, GISTravel, Education, Media, and Greetings etc. It specializes in Content development services, Website development services; PHP Programming & Development etc. It has its office in Mumbai, Kolkata and Delhi.

7) Sanver E-solutions*:* This company is based in Mumbai. They believe that Information Technology is a way to the business objectives. It is a IT consulting and Solutions Provider which offers personalized and personal business solutions using Information and Communication Technology.

8) Planet Asia: This E-commerce company in India uses track record and deep experience in externalized applications to produce high quality B2SPEC(Business to Partner, Supplier, Customer) solutions to global enterprises.

9) Candid Web Technology: This fast growing E Commerce Company in India is a provider of Complete Web Solutions for the design and development of dynamic web sites .The clients of the e-commerce company spans from the small scale companies to corporate organizations.

10) Trisoft Design: Trisoft Systems is a software services company that offers solutions exclusively on the Microsoft Platform to customers worldwide. 10 years of experience on the Microsoft Platform puts the company at the forefront of .Net Technology. We invite you to explore our website and we look forward to helping your business unleash its potential.

7. Benefits of E-Commerce to Businesses

There is a growing awareness among the business community in India about the opportunities offered by

eCommerce. Ease of Internet access and navigation are the critical factors that will result in rapid adoption of Net commerce. Safe and secure payment modes are crucial too along with the need to invent and popularize innovations such as Mobile Commerce. India Reports provides accurate and easy to understand India specific reports that capture trends, map business landscapes and custom-made reports for specific needs. The other reports available on India Reports are on retail, outsourcing, tourism, food and other emerging sectors in India.

- Easy reach to a fast growing online community
- Unlimited shelf place for products and services
- Fuse the global geographical and time zone boundaries
- Helps reach national and global markets at low operating costs.
- Research studies have indicated several factors responsible for the sudden spurt in growth of Ecommerce in India such as:
    - Rapidly increasing Internet user base
    - Technology advancements such as VOIP (Voiceover- IP) have bridged the gap between buyers and sellers online

- The emergence of blogs as an avenue for information dissemination and two-way communication for online retailers and eCommerce vendors
- Improved fraud prevention technologies that offer a safe and secure business environment and help prevent credit card frauds, identity thefts and phishing
- Bigger web presence of SME's and Corporate because of lower marketing and infrastructure costs.

- The young population find online transactions much easier

8. Bottom of Form Barriers to Ecommerce in India

Some of the infrastructural barriers responsible for slow growth of eCommerce in India are as follows. Some of these even present new business opportunities.

A. Payment Collection: When get paid by net banking one has to end up giving a significant share of revenue (4% or more) even with a business of thin margin. This effectively means y parting away with almost half of profits. Fraudulent charges, charge backs etc. all become merchant's responsibility and hence to be accounted for in the business model.

B. Logistics: You have to deliver the product, safe and secure, in the hands of the right guy in right time frame. Regular post doesn't offer an acceptable service level; couriers have high charges and limited reach. Initially, you might have to take insurance for high value shipped articles increasing the cost.

C. Vendor Management: However advanced system may be, vendor will have to come down and deal in an inefficient system for inventory management. This will slow down drastically. Most of them won't carry any digital data for their products. No nice looking photographs, no digital data sheet, no mechanism to check for daily prices, availability to keep your site updated.

D. Taxation: Octroi, entry tax, VAT and lots of state specific forms which accompany them. This can be confusing at times with lots of exceptions and special rules.

E. Limited Internet access among customers and SMEs

F. Poor telecom and infrastructure for reliable connectivity

G. Multiple gaps in the current legal and regulatory framework

H. Multiple issues of trust and lack of payment gateways: privacy of personal and business data connected over the Internet not assured; security and confidentiality of data not in place.

9. Future of E-Commerce in India

Today, we are talking about e-commerce progress level of India, the seventh-largest by geographical area, the second-most populous country, and the most populous democracy in the world. Indian eCommerce space percentage is getting higher as more and more online retailers enter the market. Although this level of entry in the e-commerce market is good from a long term perspective, the challenge is that most entrepreneurs don't have the resources or capital to wait for years before they can get profits.

The past 2 years have seen a rise in the number of companies' embracing e-commerce technologies and the Internet in India. Most e-commerce sites have been targeted towards the NRI's with Gift delivery services, books, Audio and videocassettes e.t.c. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertising revenue. The web communities built around these portal sites with content have been effectively targeted to sell everything from event and movie tickets the grocery and computers. This is not to say that the e-commerce scenario has been bad in India as highly successful e-business like baba bazaar and India mart have proved. Indian Banks too have been very successful in adapting EC and EDI Technologies to provide customers with real time account status, transfer of funds between current and checking accounts, stop payment facilities. ICICI Bank, Global TRUST BANK AND UTI-Bank also have put their electronic banking over the internet facilities in place for

the upcoming e-commerce market speed post also plain to clone the federal express story with online package status at any moment in time . The future does look very bright for e-commerce in India with even the stock exchanges coming online providing an online stock portfolio and status with a fifteen minute delay in prices. The day cannot be far when with RBI regulations will able to see stock transfer and sale over the Net with specialized services.

10. **Conclusion**

A developing country can become industrialized and modernized if it can extensively apply IT to enhance productivity and international competitiveness, develop ecommerce and e-governance applications. An information-based society or knowledge based society is composed of IT products, IT applications in society and economy as a whole. Many countries in Asia are taking advantage of e-commerce through opening of economies, which is essential for promoting competition and diffusion of Internet technologies, large enough to have a critical mass of 10 to 20 million users to be able to make an impact on e-commerce and e-governance.

In the next 3 to 5 years, India will have 30 to 70 million Internet users which will equal, if not surpass, many of the developed countries. Internet economy will then become more meaningful in India. With the rapid expansion of internet, ecommerce, is set to play a very important role in the 21st century, the new opportunities that will be thrown open, will be accessible to both large corporations and small companies. The role of government is to provide a legal framework for E Commerce so that while domestic and international trade are allowed to expand their horizons, basic rights such as privacy, intellectual property, prevention of fraud, consumer protection etc. are all taken care of.

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