
Diffusion of Technological Innovation in Business: A Study on New Generation Business in India in E-Business Environment

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ABSTRACT

E-commerce is expanding steadily in the country. Customers have the ever increasing choice of products at the lowest rates. E-commerce is probably creating the biggest revolution in the retail industry, and this trend would continue in the years to come. Various business process owners including retailers should leverage the digital retail channels. Customers in the Indian market place have started adopting the new ways of getting their requirements fulfilled and in the process there is a pool of technology savvy customers have stated emerging out. These changes are fuelled by various agencies of Government of India and made popular by multiple stake holders like online firms, banks, investors and customers at large. The pace at which the preference towards online transactions in India is growing it has become essential to understand the technological factors influencing this recent form of getting connected to the market place. Digital India lies the development of the digital ecosystem in terms of apps and app-based government services as well as free and equal access to all these for consumers across the country. The Research paper discusses the opportunities and roadblocks of new generation business in India.

Keywords: Digital, E-commerce, New generation, Opportunities, Identification and Mobile apps

Introduction

Over last couple of decades, there has been a tremendous change occurring in the information technology sector of India. Most importantly, India is almost on the path of becoming the fastest growing e-commerce market of the world if continuing at the same pace. This growth has been fuelled by huge investment in the sector and the increase of internet users in the country. In a span of 7 years from 2007 to 2014, the internet users in the country have increased from 50 million to 300 million. In the year 2014, the shipments of smart phones to India have been doubled to 80 million. The Indian internet market size is going to touch \$137 billion by 2020, the market capitalization of which is expected to be \$ 160-200 billion¹. As per sources, the e-commerce market is dominated by Flipkart with a GMV (Gross Merchandise Value) of 45% while Snapdeal is on second place with 26%. The Amazon India is at third position with GMV of 12%. Today, companies connect with their customers and partners through mobile web applications. Companies are now able to track conversations with and between customers on Facebook, Twitter, LinkedIn, YouTube, P interest and more. According to IAMAI (Internet And Mobile Association of India), it has reported that India's online advertising market is set to touch Rs. 2938 crore in 2013–2014 such as search, display, mobile, e-mail and video advertising as well as social media advertising. The mobile live stream launches like NexG TV,

Ditto TV (launched by Zee), and Zenga TV is another player that has been seeing ad revenues. The mobile wallet companies like Airtel money, ITZ cash, Oxicash and GI Tech have built a base of more than 3.5 million customers. The prospects of selling products and services to this digital population create real excitement both among the analysts as well as researchers.

LITERATURE REVIEW

In line with the development of the Internet, E-business is currently an important requirement in the global business world. E-business has offered a variety of potential benefits for both SMEs and large enterprises.

According to Scarborough and Zimmerer, although the web-based sales strategy does not guarantee success, companies with online presence have realized many benefits such as: opportunity to increase revenues, the ability to expand its reach into global markets, ability to remain open 24 hours a day and seven days a week, capacity to use interactive web to improve customer service, ability to lower the cost of doing business, capacity to improve the efficiency of the purchasing process, etc (Scarborough & Zimmerer, 2006). According Engsbo and Scupola, most SMEs adopt e-commerce by chance, not as a consequence of the systematic consideration and planning (Scupola, 2002; Engsboet al., 2001). Meanwhile, according Kartiwi and MacGregor companies do not adopt e-business at the same speed as larger

companies because of various obstacles associated with the adoption of the unique characteristics of companies (Kartiwi & MacGregor, 2007). A study on the implementation of e-commerce/ e-business by companies found that many companies in developing countries are slower to adopt e-commerce than in developed countries ((Kartiwi & MacGregor, 2007; Intrapairot & Srivihok, 2003). One basic difference is the speed of adoption of this paradigm difference between owner/managers of companies in developed countries and in developing countries, examples of comparative case between Sweden and Indonesia (Kartiwi & MacGregor, 2007). Companies in Sweden are more concerned with technical issues, while companies in Indonesia are more concerned with organizational resistance. In addition to organizational and managerial factors (Chong, 2008; Sarkar, 2009; Rashid & Al-irim, 2001; Chong & Pervan, 2009; Sarlak et al., 2009; Wilson, et al., 2008), other factors are also an obstacle sufficient significant at the e-commerce/e-business adoption in companies is the infrastructure and technical factors (Kapurubandara & Lawson, 2008; Sarkar, 2009), environmental factors (Kurnia et al., 2009; Sarkar, 2009; Rashid & Al-Qirim, 2001; Kurnia, 2008), innovation and technological factors (Rashid & Al-Qirim, 2001; Kurnia, 2008). Based on the theory of innovation diffusion (Diffusion of Innovation - DOI) Rogers, the adoption of technological innovation is divided into

3 phases, namely initiation, adoption decision and implementation (Rogers, 1995). In this stage of the adoption process is often discovered constraints faced by companies are in transition moving to e-commerce (Tucker & Lafferty, 2004; Matlay & Addis, 2003; Mendo & Fitzgerald, 2005). As already mentioned above that although e-commerce can provide many benefits for companies. While referring the previous researches gap is incorporated with the following objectives to complete the study.

OBJECTIVES OF THE STUDY

The present study has been undertaken with the following objectives:

1. To understand e-commerce as a significant factor in the emerging scenario of Indian business.
2. To study the import factors influencing e-business environment

RESEARCH METHODOLOGY

In order to substantiate the objectives of the present study, an exploratory research supported with quantitative analysis was undertaken. The findings and inferences are supplemented with the current trend in the business environment to signify the prospects and outcomes.

Sampling

With a view to examine empirically, an opinion survey was conducted among different respondents with a structured questionnaire. The opinion survey covered 143 respondents selected on the basis of a simple random sampling method.

Data collection

The present study is primarily an exploratory type. The data have been collected from both primary and secondary sources. The secondary data were collected from different secondary published reports followed by the collection of primary data through structured questionnaires and individual interviews. The respondents were requested to fill in a structured questionnaire.

Data Analysis

In order to analyse the data, descriptive analysis, such as mean, percentage, standard deviations and reliability coefficients, and inferential analysis, such as Regression analysis, have been used. All the variables were tested for outlier, missing data and normality.

Sample profile

The primary data is obtained through a well framed questionnaire circulated among the different respondents. In particular the study ascertains the age, marital status, qualification and income of the respondents.

As shown in **Table – I**, most of the respondents are male 109 (76.2 per cent) and female was very few in no. i.e. 34 (23.8 per cent). In marital status of the respondents, maximum of the respondents are married 67.13 per cent (96 no) and 32.87 per cent are unmarried. Similarly in age category of the respondents, maximum of i.e. 52.4 % of respondents are in the

age group of 46 - 55 years and followed by 22.4 % in the age group 36- 45 years. It is also found 14.0% and 9.1% of the employees found to lie in the age group 56-60 and 26-35, respectively. Further, in qualification level maximum of the respondents are graduates 51.85 per cent, then coming post graduate which constitute around 37.05 per cent and undergraduate are very low in percentage i.e. 11.19 per cent only. In annual income maximum of the respondents are having less than INR 6 lakhs of income (51.05 percent) and less having INR 7 to 15 lakhs of income.

Table-I: Demographic Profile of the Respondents (N = 143)

Category		Frequency	Percent
Sex	Male	109	76.20
	Female	34	23.80
	Total	143	100.00
Marital Status	Married	96	67.13
	Unmarried	47	32.87
	Total	143	100.00
Age	18–25 yrs	3	2.10
	26–35 yrs	13	9.10
	36–45 yrs	32	22.40
	46-55 yrs	75	52.40
	56 - 60 yrs	20	14.00
	Total	143	100.00
Qualification	Under graduate	16	11.19
	Graduate	74	51.85
	Post graduate	53	37.05
	Total	143	100.00
Annual Income	Upto INR 6 lakhs	73	51.05
	INR 7 - 15 lakhs	23	16.08
	Above INR 15 lakhs	47	32.87
	Total	143	100.00

Reliability and Validity

As shown in Table - II, it can be inferred that the items used in the questionnaire are internally homogenous

and consistent. At the same time, all items that validated the questionnaire were good. Therefore, all the factors and variables in the questionnaire are significant for the study.

Table – II Reliability Statistics (questionnaire)

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	No. of Items
0.870	0.876	8

Table - III Reliability Item-Total Statistics (questionnaire)

Sl. No.	Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	Understanding Web Terminology	44.44	19.107	0.467	0.865
2	Technology legislation	44.85	19.915	0.32	0.875
3	Internet/broadband – consumer & business markets	44.18	19.277	0.618	0.857
4	Technology infrastructure in a country (Web/Broadband/Mobile)	44.37	19.941	0.283	0.878
5	Technologies offer consumers and businesses more innovative products and services such as Internet banking, new generation mobile telephones...	43.93	18.158	0.776	0.847
6	Secure Systems: encryptions, digital certificates, SSL (secure sockets layer protocol mechanisms)	43.95	18.604	0.669	0.853
7	Distribution changed by new technologies e.g. books via the Internet, flight tickets, auctions...	43.785	18.455	0.726	0.850
8	Technology offer companies a new way to communicate with consumers e.g. Social media, Customer Relationship Management (e CRM), etc.	43.641	18.251	0.785	0.847

After reviewing the above analysis it can be concluded that the items used in the questionnaire are internally homogenous and consistent. At the same time all the items are good.

Table - IV Descriptive Statistics (Variables)

Sl. No.	Items	Mean	Std. Deviation	N
1	Understanding Web Terminology	3.769	0.646	143
2	Technology legislation	3.356	0.643	143
3	Internet/broadband – consumer & business markets	4.028	0.488	143
4	Technology infrastructure in a country (Web/Broadband/Mobile)	3.832	0.691	143
5	Technologies offer consumers and businesses more innovative products and services such as Internet banking, new generation mobile telephones...	4.272	0.558	143
6	Secure Systems: encryptions, digital certificates, SSL (secure sockets layer protocol mechanisms)	4.251	0.562	143
7	Distribution changed by new technologies e.g. books via the Internet, flight tickets, auctions	4.537	0.475	143
8	Technology offer companies a new way to communicate with consumers e.g. Social media, Customer Relationship Management (e CRM), etc.	4.747	0.410	143

Table – V Regression coefficients of Job Performance

Sl. No.	Items	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R ²	F	Sig n.
		B	Std. Error	Beta					
1	Understanding Web Terminology	0.321	0.131	0.241	2.321	0.002*			
2	Technology legislation	-0.601	0.306		-1.963	0.053			
3	Internet/broadband – consumer & business markets	0.235	0.059	0.234	3.965	0.000*			
4	Technology infrastructure in a country (Web/Broadband/Mobile)	0.177	0.073	0.211	2.434	0.017**			
5	Technologies offer consumers and businesses more innovative products and services such as Internet banking, new generation mobile telephones...	0.202	0.078	0.244	2.596	0.011**			
6	Secure Systems: encryptions, digital certificates, SSL (secure sockets layer protocol mechanisms)	0.217	0.043	0.353	5.035	0.000*			
7	Distribution changed by new technologies e.g. books via the Internet, flight tickets, auctions	0.204	0.043	0.271	4.719	0.000*			
8	Technology offer companies a new way to communicate with consumers e.g. Social media, Customer Relationship Management (e CRM), etc.	0.154	0.052	0.195	2.961	0.004*			

*Significant at 1 per cent level, ** significant at 5 per cent level

Table - IV reveals that each factor used in this study is a good dimension. Since the mean value of each item was coming more than 3.0 which signify that all the respondents respond positively to the factors. It has been observed that out of the total 8 different variables the total mean score of the 8th variable - Technology offer companies a new way to communicate with consumers e.g. Social media, Customer Relationship Management (e CRM), etc. was coming highest i.e. 4.747, then coming 7th - Distribution changed by new technologies e.g. books via the Internet, flight tickets, auctions 4.537 and least is coming Technology infrastructure in a country (Web/Broadband/Mobile). Further, the standard deviations of all the factors are shown in the above table. The standard deviation of the variable i.e. Technology infrastructure in a country (Web/Broadband/Mobile) (0.691), Understanding Web Terminology (0.646) and Technology legislation (0.643) was coming high in comparison with other variables.

Further in Table – V, the R² square value is coming to be 0.789 i.e. all the independent variables influenced the dependent variables by 78.9 per cent which is a good sign of the model formulation. The F statistic is 37.364, and its significant value was coming 0.000 so the model is significant. The t value tells us that the predictor, The variables like -

Understanding Web Terminology, Internet/broadband – consumer & business markets, Secure Systems: encryptions, digital certificates, SSL (secure sockets layer protocol mechanisms), Distribution changed by new technologies e.g. books via the Internet, flight tickets, auctions, Technology offer companies a new way to communicate with consumers e.g. Social media, Customer Relationship Management (e CRM), etc. are significant at 1 per cent level and the variables - Technology infrastructure in a country (Web/Broadband/Mobile), Technologies offer consumers and businesses more innovative products and services such as Internet banking, new generation mobile telephones... are significant at 5 percent level. Out of all the variables taken to study technological factors of e-business environment the variable - Technology legislation is not coming significant.

EMERGING FACE OF INDIAN BUSINESS ENVIRONMENT

There is a need for need for retailers to communicate authentic value proposition consistently across digital and physical channels, enhance customers' end to end shopping experience through use of technology, increase two way engagements with customers through digital channels and deliver a seamless shopping experience across channels by focusing increasingly on data analytics, managing rapid changes in business

¹³ CII and Deloitte Touche Tohmatsu India LLP Report

¹⁴ Pew Research Center, The Economic Times, Bhubaneswar edition,, 29th February 2016

environment and technologies, and building more agile systems to connect multiple channels, channels and points of sale while providing a unified view of the customer¹. The emergence of social media (Table-VI)

has made the process really easy and accessible in several countries including India. In India, over 57% of people on Facebook are connected to small businesses.

Table- VI ¹⁴Social Media Popularity of Top 10 and top bottom countries

Top 10 Countries			Bottom 10 Countries		
SL	Country	%	SL	Country	%
1	Jordon	90	1	Germany	50
2	Indonesia	89	2	Pakistan	50
3	Phillippines	88	3	Japan	51
4	Venezuela	88	4	South Korea	51
5	Turkey	87	5	France	57
6	Palesti-Ter	86	6	India	52
7	Chile	85	7	China	63
8	Malaysia	85	8	Burkina Faso	65
9	Nigeria	85	9	Italy	65
10	Russia	85	10	Spain	65

Another factor adding to the emergence of E-commerce is the mobile wallets. According to a survey by Nielsen, Indian consumers are adopting the wallet almost as rapidly as their counter parts in more developed countries. Customers

want apps to also help with mobile recharging, booking maite tickets, shopping and such other facilities. Paytm has three in every 10 smart phone users using their app, just one in every 10 users use the company's website.

Table- VII Top Mobile Payment Apps in India¹⁵

SL	Company	Top Mobile Payment Apps (%)	Time Spent by Users (Mins) Month
1	Paytm	39%	70
2	Mobikwik	26%	40
3	Freecharge	17%	29
4	My Airtel	10%	18
5	My Vodafone	7%	17
6	Oxigen Wallet	6%	17
7	Paytm Wallet	5%	14
8	Pockets by ICICI	4%	23

¹⁵Nielsen Informat Mobile Insights, Dec 2015, Business Standard, Bhubaneswar edition, 29th February 2016, p.6

Along with mobile apps e-commerce is expected to grow at more than 30% annually. Reliance industries is extending the Jio brand name to new businesses, the latest of these being a fashion ecommerce site dubbed AJIO Com. The company has named its telecom unit Reliance Jio and is upcoming digital wallet Jio Money. According to the Boston Consulting Group and the Retailers Association of India estimated that the size of India's ecommerce market, including travel and other services, will swell to \$60-70 billion by 2019 from about \$17 billion in 2014. Snapdeal launched seven regional language versions of its app. Quikr is now available in seven Indian languages. Hike Messenger launched Eight Vernacular language and Ola cabs have its driver's app in several regional languages. A steady growth in the telecom subscriber base in India (as per Table - VIII, Figure I) has also been working as a change agent in the Indian business environment.

Table-VIII India's Telecom Subscriber base (Mn)

Year	User Base (Mn)	Teledensity**
2007	200	15
2008	300	20
2009	400	30
2010	600	45
2011	800	65
2012	900	75
2013	850	70
2014	875	70
2015	900	70
*2016	975	75

*Till Nov 2015 ** Connections as per 100 individuals

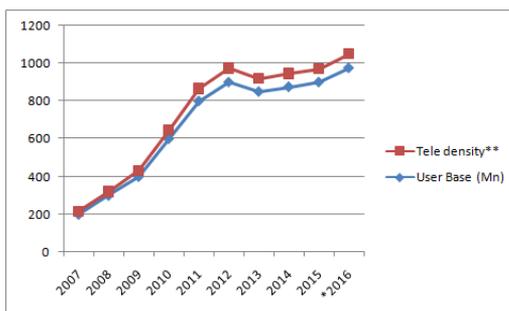


Figure I: India's Telecom Subscriber base¹⁶ (Mn)

In addition to all these factors, the banking sector in India has played a vital role in making E-commerce as an emerging business practice and a preferred tool by the customers. Retail payments in India has seen a paradigm shift with card payments are tending positive over the years (as shown in Table- IX)

Table- IX Retail Payments in India (Transaction Mix by Volume¹⁷)

Year	Paper Clearing	Electronic Clearing	Card Payments	Prepaid Payment Instruments
2012	53.0	20.2	25.6	0.00
2013	44.7	23.6	29.4	0.00
2014	34.7	30.6	31.1	0.00
2015	29.9	26.7	35.6	7.9

Table- X Top 5 Banks with Mobile Banking Transactions¹⁸ (Figures are for December 2015)

SL	Bank	Mobile Transactions		Market Share	
		Volume (lakhs)	Value (cr)	By Volume	By Value
1	SBI	152	17,636	39	36
2	ICICI	70	10,577	18	22
3	Axis	60	6,268	15	13
4	HDFC	39	8,717	10	18
5	Kotak	17	2,325	4	5

¹⁶ TRAI, TechSci Research), Published in Business Standard, Bhubaneswar edition. 20-21st February 2016, p.6

¹⁷ RBI, JM Financial, Business Standard, Personal Finance, Bhubaneswar edition, 14th March 2016, p.1

¹⁸ RBI

State Bank of India has its own digital baby in the name of SBI rewards. Axis Bank behind with its Pingpay, ICICI Bank has launched “all new mobile banking app”, HDFC Bank with its launch of Payzapp is almost replicating a Flipkart or Paytm.

With the enthusiasm and the support coming from all directions including customers and government alike, the future of business seems to be mostly in the e-commerce interface. However there are certain challenges this emerging form is expected to overcome. The following paragraphs brief about these prospects and challenges, e-commerce in India is going to have.

Developments and prospects

- The connectivity is improving because of Government of India’s announcement of Rs 20,000 crore packages to extend variable coverage in India and Digital India’s initiative to cover 2.5 lakh villages with broadband access which improve internet access.
- Online companies like Snapdeal and Craftvilla are in various stages of multiple-local-language rollout. Snapdeal has built a lighter mobile browser “Snap-Lite” to allow users to shop online using slower 2G networks.
- Merchant loyalty and engagement have become key factors in India’s cut-throat e-commerce industry.
- E-commerce majors like Amazon, Paytm and Shopclues are recreating the click-to-buy model for their sellers on business-to-business (B2B) platforms as well.
- Cash backs are an incentive programme where a fixed or a percentage of the amount spent back to the wallet holder’s account. It primarily boosts repurchase at purchases, reduces cash on delivery orders and order returns.
- Many consumers in metro cities have seen their cash transactions go down significantly because of growing e-commerce.
- Paytm has plans to buck the trend and double the salaries of around 200 employees across the company as reward their noteworthy performance.
- Marketers and publishers are using innovative methods to create format and deliver digital advertising. One form is “native advertising” content that bears a similarity to the news, feature articles product reviews, entertainment and other material that surround it online.
- The secular shift in technology, mobility, social computing and analytics have led to changing consumer behavior. Thus, the digital and physical worlds are starting to come together. So the innovation has brought efficiencies creating a better customer experience through best pricing, speed and convenience.
- DIPP (Department of Industrial Policy & Promotion) clarified 100 percent

FDI is only for the market place format of e-commerce, where the company provides a platform to act as a facilitator between buyers and sellers and not for the inventory led model.

- Almost all online stores offer benefits like 100 percent purchase protection, guaranteed one day delivery, easy returns and COD (Cash on Delivery) etc.

Issues and challenges

- Failure of deliveries, pilferage in cash on delivery orders, or theft; logistics remains as one of the biggest headaches.
- E-commerce and mobile-app based service provides such as Amazon, Flipkart, Snapdeal, Paytm and Ola are increasingly roping in ethical hackers to look for loop holes in their system by continuously trying to hack into them from outside.
- Online discounts are mostly limited to select brands such as online-exclusive ones, old merchandise and own levels as ecommerce companies looked to protect margins and turn profitable.
- Amazon plans to offer loans to key vendors selling on its portal in an effort to lock-in sellers from shifting loyalties to rivals Flipkart and Snapdeal.
- Internet as a medium of sale and promotion effectively addresses challenges faced by traditional consumer's brands like maintenance of huge inventories that incur significant storage costs.

- Companies like Flipkart and Amazon, Paytm operates on a zero inventory model. It, however, encourages its sellers to store stocks in third party fulfillment centers to control quality and reduce delivery timelines.
- While E-commerce adoption is growing in the country, there is still a large section of population that is hesitant about making purchases online. The companies are working hard to convey features like easy returns and access to genuine products that essentially build customers trust and confidence in shopping.
- There have been several negative issues which are coming frequently, like the ecommerce giant Amazon has been in a heated battle with the state government over a taxation issue of Karnataka. Also Flipkart is engaged with several stakeholders to urge the Uttarakhand Government to revoke the addition tax on e-commerce.
- Coming to the authenticity test of sellers, Flipkart has blacklisted 250 sellers on its platform after its ongoing-"Mystery Shopping" initiative called "Secret Agent", they were selling poor quality products or defaulting on deliveries or making wrong packaging or price labeling.
- The absence of quality broadband in smaller cities and towns in particular has come in the way of growing the market for online retail.

CONCLUSION AND FURTHER SCOPE OF STUDY

E-commerce has started influencing the lifestyle of Indian households as well as commercial entities. As realized over past years, the business processes have almost started adopting different platforms by incorporating technology thanks to e-commerce. National Informatics Center (NIC), a Government of India enterprise is primarily looking after the development of information technology in India. NIC was the beginning of an effort to computerize government and digitalize India for the 21st century. Further, NIC has done a remarkable job of building human capacity, institutional frameworks and programmers for e-governance functionalities. Another organization such as C-DOT digitized India's networks and the number of phones has increased from 5 million to 1 billion. Further, the creation of the National Knowledge Network (NKN) is a high bandwidth network to connect all educational institutions in the country to enable high-end research and collaboration. Another internet access for the rural population is the National Optical Fibre Network aimed to provide high speed broadband connectivity to 2, 50,000 Panchayats in the country. With all these developments happening quite often, there is still a requirement of real research work required to understand and address several areas related to this revolutionary process which have got a tremendous potential to influence the business and economy at large.

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