A SURVEY ON HUMAN AREA NETWORKING IN REDTACTON USING DNA

S. Satish Anand[1] J. Jhawahar[2] Rajasathyia K.[3]

ABSTRACT

Technology is making many things easier; we can say that our concept is standing example for that. So far we have seen LAN, MAN, WAN, INTERNET & many more but here is new concept of "REDTACTON" which makes the human body as a communication network by name.... HAN (Human Area Network). NTT lab from Japan is currently testing & developing this revolutionary technology. RedTacton is a new Human Area networking technology that uses the surface of the human body as a safe, high speed, network transmission path. RedTacton uses the minute electric field generated by human body as medium for transmitting the data. The chips which will be embedded in various devices contain transmitter and receiver built to send and accept data in digital format.

In this paper we will discuss about RedTacton, and its working states and applications of RedTacton various fields. We will compare our RedTacton with the other technology for data transmission to know about my proposed system of using in DNA for more security.

KEYWORDS

Cellular Phones, Electro Optic Devices, Lasers and Electro Optics, Optical Polarization, Optical Receivers, Optical Sensors, Optical Transmitters, Photo detector, Prototypes, and Transceivers etc.

INTRODUCTION

We may have imagined the feature as a place crawling with antennas and emitters, due to the huge growth of wireless communications. Thus NTT labs from Japan has announced that is currently testing a revolutionary technology called "RedTacton", which use the electric fields generated by the human body as medium for transmitting the data. The chips which will be embedded in various devices contain a transmitter and receiver built to send and accept data in digital format. The chips can take any type of file such as mp3 music file or mail and convert it in to the format that takes the form of digitals pulse that can be passed and read through a human being electric field .the chip in receiver devices reads these tiny changes and convert the file back into its original form.

REDTACTON

RedTacton is a new Human Area Networking technology that uses the surface of the human body as a safe, high speed network transmission path. RedTacton uses the minute electric field emitted on the surface of the human body. Technically, it is completely distinct from wireless and infrared. A transmission path is formed at the moment a part of the human body comes in contact with a RedTacton transceiver. Physically separating ends the contact and thus ends communication using RedTacton, communication starts when terminals carried by the user or embedded in devices are linked in various combinations according to the user's Communication is possible using any body surfaces, such as the hands, fingers, arms, feet, face, legs or torso. RedTacton works natural, physical movements.

PROTOTYPE

PC Card Transceiver (PC Card type)[1]

Figure-1

PC Card was originally designed for computer storage expansion, but the existence of a usable general standard for notebook peripherals led to many kinds of devices being made available in this form. Typical devices included network cards, modems, and hard disks. Communication speed: 10 Mbps; whereas, Communication method: Half-duplex.

[1]Student, S. A. Engineering College, Tamil Nadu, India, sathishsanand@gmail.com
[2]Student, S. A. Engineering College, Tamil Nadu, India, jhawaharj@gmail.com
[3]Senior Lecturer, S. A. Engineering College, Tamil Nadu, India, selvisenpaham@yahoo.co.in

Embedded Receiver (Hub Type)[1]

Receiver is used with the speed of 10 Mbps. Protocols and communication method is same as that of PC Card Transceiver. Communication speed: 10 Mbps; whereas, Communication methods: Half-duplex.

USB Transceiver (Box Type)[1]

It is a type of connection between a computer and peripheral device like a printer or a camera. The original USB could transfer data at a rate of 12Mbps (million bits per second), a new USB2.0 now transfers at a rate of 480 Mbps.

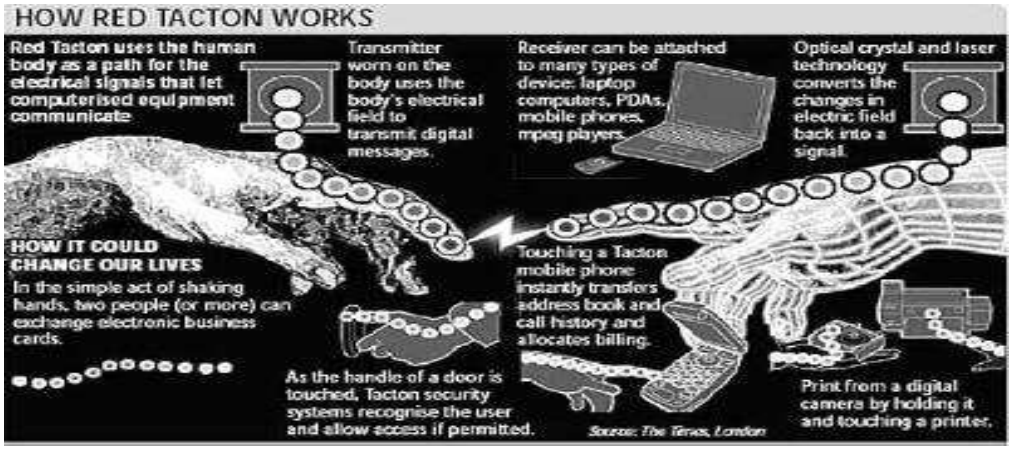
FUNCTIONING

Using a new super-sensitive photonic electric field sensor, RedTacton can achieve duplex communication over the human body at a maximum speed of 10 Mbps.[2];

1. The RedTacton transmitter induces a weak electric field on the surface of the body.

2. The RedTacton receiver senses changes in the weak electric field on the surface of the body caused by the transmitter.

Figure-2

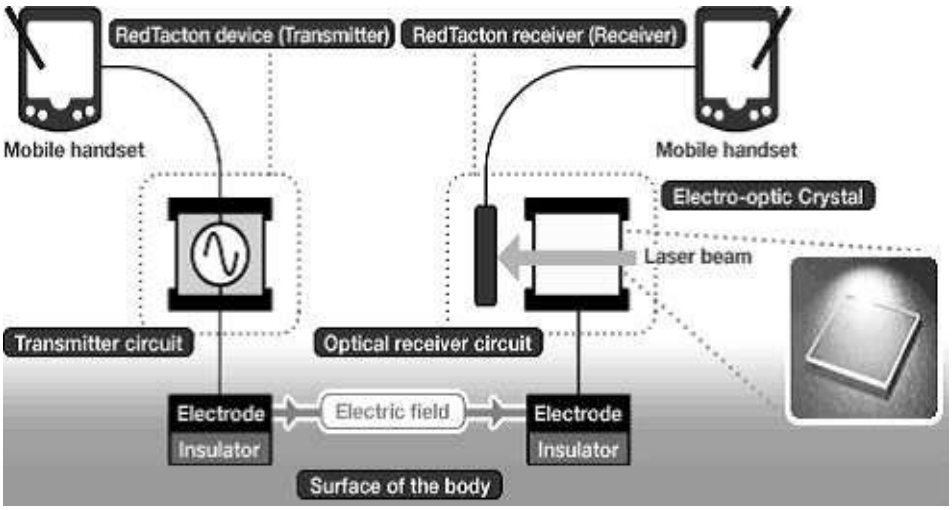


3. RedTacton relies upon the principle that the optical properties of an electro-optic crystal can vary according to the changes of a weak electric field.

4. RedTacton detects changes in the optical properties of an electro-optic crystal using a laser and converts the result to an electrical signal in an optical receiver circuit.

5. Note that RedTacton transceivers which integrate transmitters and receivers are also available.

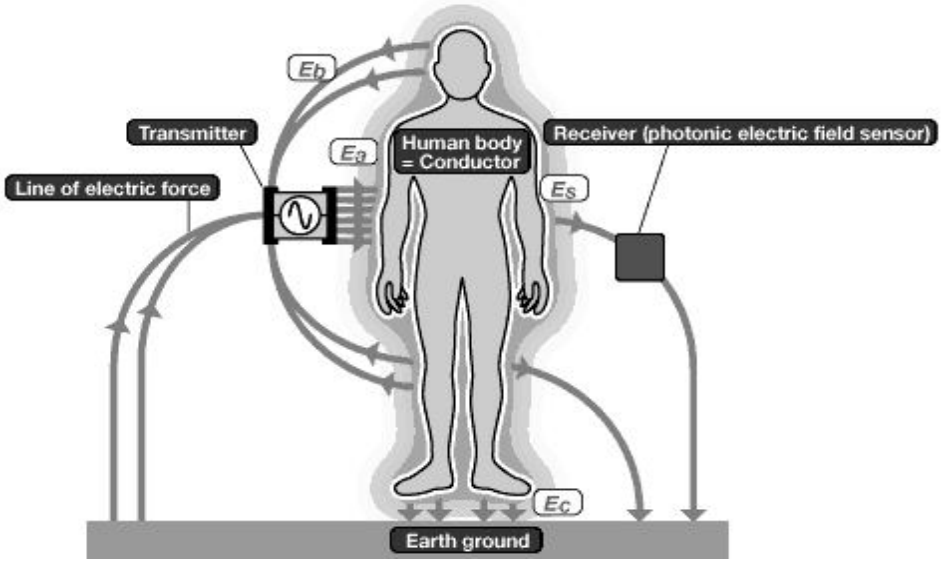
Figure-3



MECHANISMS

The transmitter sends data by inducing fluctuations in the minute electric field on the surface of the human body. Data is received using a photonic electric field sensor that combines an electro-optic crystal and a laser light to detect fluctuations in the minute electric field. The naturally occurring electric field induced on the surface of the human body dissipates into the earth. Therefore, this electric field is exceptionally faint and unstable. The photonic electric field sensor developed by NTT enables weak electric fields to be measured by detecting changes in the optical properties of an electro-optic crystal with a laser beam.[2]

Figure-4



MAIN FEATURES

RedTacton has three main functional features.

Touch

Touching, gripping, sitting, walking, stepping and other human movements can be the triggers for unlocking or locking, starting or stopping equipment, or obtaining data.[1]

Using RedTacton, communication starts when terminals carried by the user or embedded in devices are linked in various combinations through physical contact according to the human's natural movements.

Broadband & Interactive

Duplex, interactive communication is possible at a maximum speed of 10Mbps*. Because the transmission path is on the surface of the body, transmission speed does not deteriorate in congested areas where many people are communicating at the same time.

Maximum communication speed may be slower than 10Mbps depending on the usage environment. Communication speed can deteriorate in crowded spaces due to a lack of bandwidth. Device drivers can be downloaded instantly and executable programs can be quickly sent. Taking advantage of this speed, device drivers can be downloaded instantly and execute programs can be sent.[1]

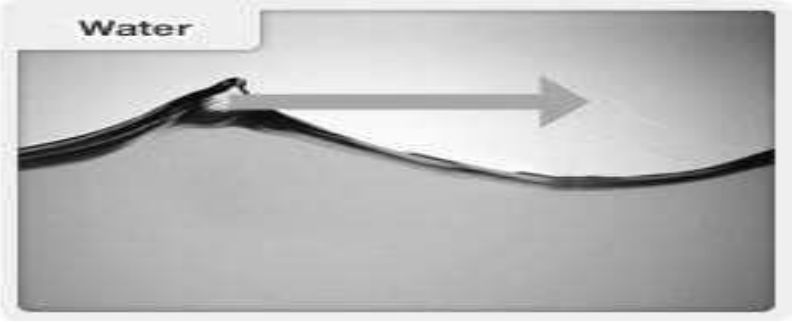
Any-Media

In addition to the human body, various conductors and dielectrics can be used as transmission media. Conductors and dielectrics may also be used in combination*.

- Signals travel along the surfaces of materials,
- Signals pass through materials,
- Combinations of travel along and passing through materials.

A communication environment can be created easily and at low-cost by using items close at hand, such as desks, walls, and metal objects.[3]

Figure-5



APPLICATIONS

There are many applications of RedTacton in different fields. This technology will widely used in daily working schedule and provides[5]:

Convenience to People

- One–To–One Services;
- An Alarm.

RedTacton devices embedded medicine bottles transmit information on the medicines attributes. If the user touches the wrong medicine, an alarm will trigger on the terminal he is carrying. The alarm sounds only if the user actually touches the medicine bottle, reducing false alarms common with passive wireless ID tags, which can trigger simply by proximity[1].

Figure-6 shows an alarm sounds automatically to avoid accidental medicine ingestion in the first application on the left side of figure. Right part of figure-6 describes touch advertising and receives Information[1].

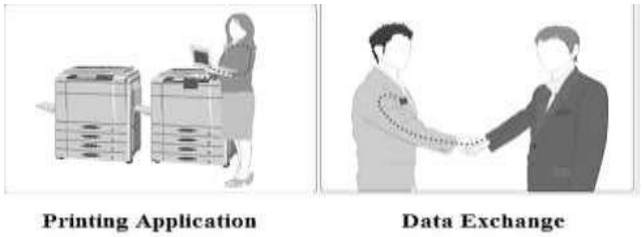
Figure-6: One-To-One Services

Touch Advertising

When a consumer stands in front of an advertising panel and information matching his or her attributes is automatically displayed. By touching or standing in front of items, consumers can get more in-depth information[1].

Intuitive Operation

Figure-7



Touch a printer to print a print out where you want just by touching the desired printer with one hand and a PC or digital camera with the other hand to make the link Complicated configurations are reduced by downloading device drivers "at first touch" [3]

- **Instant private data exchange**

  By shaking hands, personal profile data can be exchanged between mobile terminals on the users. (Electronic exchange of business cards) Communication can be kept private using authentication and encryption technologies[3].

  Just Touching a phone makes it your own phone number is allocated and billing commences. Automatic importing of personal address book and call history.

- **Personalization**

  There are many applications under personalization. Some applications are[2]:

  Personalization of Automobiles

  The seat position and steering wheel height adjust to match the driver just by sitting in the car .The driver's home is set as the destination in the car navigation system. The stereo plays the driver's favorite song.

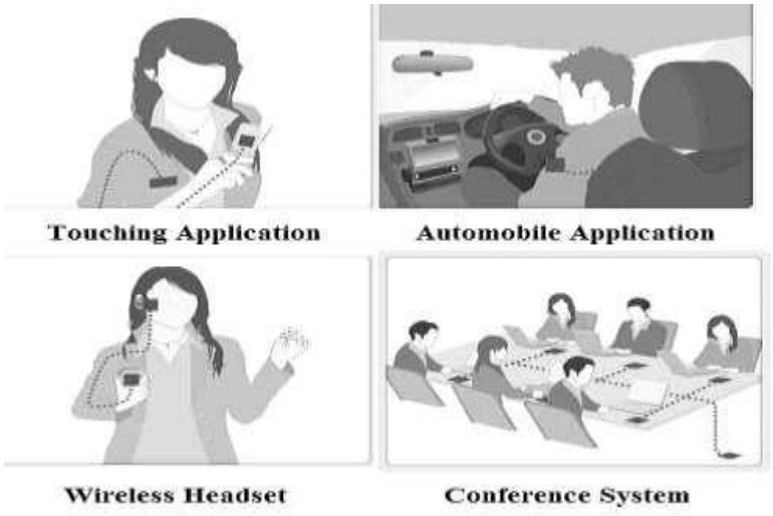
  Wireless Headset

  RedTacton can carry music or video between headsets, mobile devices, mobile phones, etc. Users can listen to music from a RedTacton player simply by putting on a headset or holding a viewer.

  Conference System

  An electrically conductive sheet is embedded in the table. A network connection is initiated simply by placing a laptop on the table. Using different sheet patterns enables segmentation of the table into subnets.

Figure-8



Security Applications

RedTacton is very secure in all respects such as authenticity, authorization and verification as well as unlocking.[2]

- User verification and unlocking with just a touch carrying a mobile RedTacton capable device in one's pocket, ID is verified and the door unlocked when the user holds the doorknob normally. Secure lock administration is possible by combining personal verification tools such as fingerprint ID or other biometric in the mobile terminal.

  Automatic Access Log

  There is also a facility to access automatic log for confidential document storage. These access logs contain database information in the form of log files.

Other Applications

RedTacton has many applications. So, it is not easy to explore all the applications. Some additional applications are as[4]**:**

Figure-9: Other Applications

Under Water Communication Communication inside body

Under Water Communication

RedTacton allows communication in outer space and in water where the speech constraints are very high and thus enables a highly efficient means of expression of speech which is beyond the purvey of human beings.

Communication inside body

RedTacton is also used for the treatment. In human body, it is used to detect ailments such as abnormal growths, tumors and excrescences affected tissues and thus helps in curing different ways.

PROTECTION

RedTacton uses the electric field that occurs naturally on the surface of the human body for communication. Transmitter and receiver electrodes are covered with an insulating film. No current flows into the body from the RedTacton transceiver. There is no current flowing from the RedTacton transceiver; however, the body indirectly receives a minute electric field. This causes electrons already present inside the body to move, creating a minute displacement current. This displacement current is similar to those occurring in everyday life.

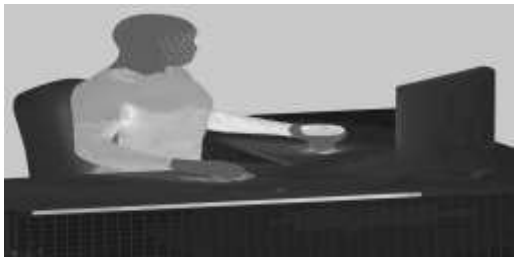
RedTacton is in conformity to the "Radiofrequency-exposure Protection RCR standard (RCR STD-38)" issued by the Association of Radio Industries and Businesses (ARIB).[5]

PROPOSED TECHNIQUE

User Login on PC

The seat position and handling the mouse and keyboard match the user just by sitting in before the computer. The user gets directly gets into the user account. Other then the authorized person cannot open the account of user in the computer.

Figure-10



FIXING DNA CELLS IN TRANSMITTER AND RECIEVER

If the transmitter and receiver are lost means, we could loose our data and also chance to hack our data's. So, in every human we have a unique DNA cells, if we attached our DNA into transmitter and receiver, it can be applicable to only the user whose DNA is fixed in transmitter. Then there is no possibility of hacking and more security. Only the authorized users can able to work on the RedTacton.

ADVANTAGES

- Data transfer is faster and easier through this technology.
- Data loss during this transfer is less.
- Usage of minimum amount of power.
- More secure.

DISADVANTAGES

- There is a possibility of missing or misplacing the DNA of user or other user.
- More costly.

APPLICATIONS OF CURRENT TECHNIQUES

- Develop the RedTacton technology so that it can be used by military forces.
- Adopt this Technology to make automation in insulin monitoring so that patient can get treatment in right time
- Use RedTacton Technology in transferring visiting cards.

FUTUREAPPLICATIONS OF TECHNIQUES

- Add the technology common guns at military like M16.
- Use the technology to update insulin content information to the data base automatically.
- Use the technology to lock home appliances and bank lockers.
- Use the technology to spot the tumors and abnormal tissue growth.
- The bank database can be updated by the users and new account creations will be made easy.
- The RedTacton device can be used in transport systems so that all visually challenged people can use the transport efficiently.
- The 24*7 contact between the patient and the doctor could be established to get the instant reports.
- The technology can be used in paying current bill, ration shops etc.

CONCLUSIONS

Human body networking is more secure then broadcast systems, such as Bluetooth, which have a range of about 10m. With Bluetooth it is difficult to rein in the signal and restrict it to the device you are trying to connect to you usually want to communicate with one particular thing, but in a busy place there could be hundreds of Bluetooth devices within a range. The performance of RedTacton is better as compared to other technologies. There is no any type of problem of hackers as our body itself is the transmission media. Today main issue is speed. It is solved by RedTacton by providing very high speed of 10 Mbps within short distances. The evolution of RedTacton technology is a big achievement, which will likely be targeted for use in applications such as wireless headset, medical application, security applications, and wireless transmission by applying different actions. So we can conclude that this technology will change the future of wireless communication.

REFERENCES

1. NTT (February 2005). "RedTacton: An Innovative Human Area Networking Technology.", Available at: http://www.ntt.co.jp/news/news05e/0502/050218.html.

2. Scribed (2010). "Human Area Networks–RedTacton.", Available at: http://www.scribd.com/doc/55240946/ RED-TACTON-REPORT.

3. Zhang, Y., *et al.* (2010). "Find Multi-Objective Paths in Stochastic Networks via Chaotic Immune PSO", Expert Systems with Applications, Vol. 37, No. 3, pp. 1911-1919.

4. www.technologyreview.com

5. Technical Papers 50webs. "RED TACTON", Available at: http://technicalpapers.50webs.com/pdf/redtaction.pdf.

*****

FOR ANY CLARIFICATION OR SUGGESTION, WRITE US:

Editor-In-Chief
Pezzottaite Journals,
24, Saraswati Lane, Bohri,
Near Modern Dewan Beverages,
Jammu Tawi – 180002,
Jammu and Kashmir, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

MANUFACTURING COMPETITIVENESS AND INDIAN ECONOMY: SOME STRATEGIES FOR IMPROVING THE COMPETITIVENESS OF INDIAN INDUSTRY

Sajeev S. R.[4] Dr. Manoj P. K.[5]

ABSTRACT

For Indian economy in the ongoing era of economic deregulation and globalization, manufacturing is largely recognized as the engine for economic growth and creation of wealth. This is because of the fact that share of agriculture to the national GDP is fast declining and so does the employment avenues in this sector. Industrial sector in general and manufacturing sub-sector in particular are showing stagnancy in growth over the last two decades. So, there exists a very disappointing trend in the relative growth rates of agricultural sector and industrial sector (particularly manufacturing segment – the largest component within it), which in turn results in growing imbalance between the three major sectors viz. services, industries, and agriculture. In fact, the contribution of the industry sector to GDP has been stagnant at about 27 per cent between 1991 and 2003.Of this 27 per cent, the share of the manufacturing has been static at about 17 per cent which is quite low as per the international standards. For Indian economy to exhibit a balanced, stable and sustainable growth it is imperative that Indian manufacturing has to grow phenomenally particularly through improving its competitiveness primarily in terms of costs and quality. There is growing need for manufacturing companies in India to adopt modern manufacturing practices like Total Quality Management (TQM) for improving the quality of products and also to effectively control the costs. This paper suggests some macro level strategies for improving the competitiveness of Indian manufacturing industry.

KEYWORDS

Competitiveness, NMCC, Innovation, TQM, Lean Manufacturing, Value Added etc.

INTRODUCTION

India economy has witnessed quite a large number of favourable developments in the ongoing era of economic deregulation initiated in the early nineties. The growth rate of the economy has been one of the highest among all emerging economies. Besides, such other relevant factors as external debt, foreign exchange reserves, resilience of the financial and banking sector etc. have been quite appreciable over the years. Given the current pace of economic growth and also the generally favourable macroeconomic environment, it is widely recognized that India will join the league of developed nations in the near future In spite of all of these, there are certain adverse trends in Indian development experience in the post-reforms regime. These include, most importantly, a general stagnancy in the industrial sector (which is primarily the manufacturing sector) leading to growing imbalance in the economy, with the services sector growing at a fast pace while the agricultural sector declining equally fast. In fact, the share of industrial sector to the overall GDP of the nation has been hovering at about 27 per cent for the last two decades or so. So also, manufacturing sub-sector – the most prominent constituent of the industrial sector has been stagnant at about 17 per cent over these years. In spite of certain clear indications of a revival in industrial sector (particularly manufacturing) since 2006, it needs to be stated that urgent and focused attention is required in the case of manufacturing sector to maintain and improve the current pace of growth by reducing the growing imbalance among the different sectors. For Indian economy to exhibit a balanced, stable and sustainable growth it is highly imperative that Indian manufacturing has to grow phenomenally particularly through improving its competitiveness primarily in terms of costs and quality. Of late, realizing the growing imbalance in the economy, the central government has seriously been considering the issue of improving competitiveness of Indian manufacturing sector so that it boosts the performance of this sector and hence reduces the imbalance between the different sectors. Accordingly, a separate national level council viz. National Manufacturing Competitiveness Council (NMCC) has been set up by the government essentially for the purpose of enhancing the performance of manufacturing sector. NMCC has come up with a National Strategy for Manufacturing (NSM), which has pointed out that in order to achieve a balanced growth of 8 to 10 percent for the economy, India should target a minimum manufacturing growth rate of 12 percent per annum, and the share of manufacturing should reach the level of 30 to 35 percent by 2020. Thus, in the ongoing TRIPS-compliant and globalized regime the need for enhancement of manufacturing competitiveness, assumes tremendous significance.

RELEVANCE AND SIGNIFICANCE OF STUDY

For Indian economy to exhibit a balanced, stable and sustainable growth it is highly imperative that the manufacturing sector – the most dominant sub-sector within the industries sector – should grow phenomenally primarily through improving its competitiveness in terms of costs and quality. In the ongoing TRIPS – compliant and globalized regime, the need for enhancement of productivity and competitiveness of for improving the share of manufacturing to the overall GDP, from the present level of nearly 17 percent to the desired level of 30 to 35 percent (i.e. almost doubling the current share) can be achieved only through a "manufacturing breakthrough". This in turn necessitates adoption of some few clearly articulated, carefully designed, pragmatic and time-tested strategies.

[4]"Thejus", Poothotta P.O., Kerala, India, srsajeev09@gmail.com
[5]Assistant Professor, Department of Applied Economics, CUSAT, Kerala, India, manoj_p_k2004@yahoo.co.in

STAGNANCY IN INDIAN MANUFACTURING SECTOR: NEED FOR ENHANCED COMPETITIVENESS

The imbalance between the different sectors of Indian economy in respect of their relative share to the national GDP has been an issue of utmost significance for the last so many years. The situation is worsening year after year; with the share of industries remaining rather stagnant at a relatively low level of about 27 percent. The share of agriculture has been declining significantly every year, while that of services growing fast. As of FY 2007, the share of agriculture, industry and services stands at 18.5 percent, 24.4 percent and 55.1 percent respectively.

Table-1

(In percentage)

Financial Year	Agriculture	Industry	Services	Total GDP
FY 1950-51	59.60	14.50	25.90	100
FY 1960-61	55.10	17.30	27.60	100
FY 1970-71	48.50	20.70	30.80	100
FY 1980-81	41.50	21.60	36.90	100
FY 1989-90	33.90	27.00	39.10	100
FY 1991-92	26.70	31.30	42.00	100
FY 2002-03	21.90	25.90	52.20	100
FY 2003-04	22.20	25.80	52.00	100
FY 2004-05	20.80	26.00	53.20	100
FY 2005-06QE	19.90	26.10	54.00	100
FY 2006-07RE	18.50	26.40	55.10	100

Sources: (1) *Economic Survey* (various years till 2006-'07) Ministry of Finance, Govt. of India.
(2) Statistics of Central Statistical Organization (CSO), Govt. of India.

Notwithstanding the fact that, of late, there have been indications of a revival in the industrial sector since FY 2006, there is no scope for complacency because its share is still very poor as a part of the overall GDP. As the imbalance between the three major sectors grows up, it is imminent to chalk out appropriate strategies for improving the relative share of manufacturing sector (and agriculture sector). Urgent policy initiatives are required to correct this. (Table I).

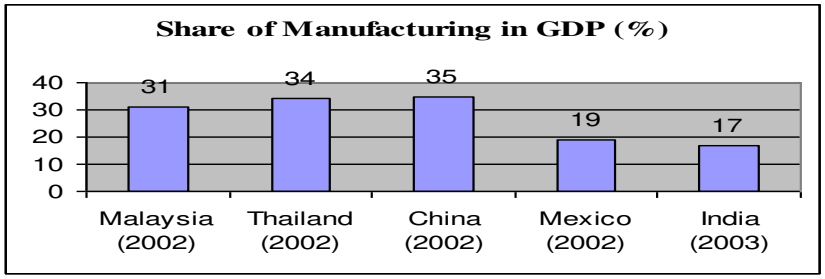
Table-II: Share of Manufacturing in GDP of select East Asian Economies

Malaysia (2002)	Thailand (2002)	China (2002)	Mexico (2002)	India (2003)
31	34	35	19	17

Sources: World Development Indicators 2004

It may be noted that the share of industries sector to the national GDP has been hovering at about 27 per cent over the last two decades or more. Of this, the share of manufacturing sub-sector has been roughly about 17 per cent throughout. However, going by international standards, this share of manufacturing sector may be observed to be quite low, as is evident from the comparative figures relating to some of the East Asian economies. (Table II and Figure I).

Figure-I: Share of Manufacturing in GDP of select East Asian Economies



Sources: World Development Indicators 2004

ENHANCED PERFORMANCE OF INDIAN MANUFACTURING: AN IMMINENT NEED

For a sustained and balanced growth of the economy at the targeted level of 8 to 10 per cent, a careful balance has to be maintained between the three major segments of the economy viz. agriculture, industry and services; or, in other words, there has to be a balancing between "farm, factory and services". The manufacturing sector in India grew only at an average of 6.3 per cent during 1991 to 2003 as against 12 per cent in China.

Government of India has set up the National Manufacturing Competitiveness Council (NMCC) in 2004 as one of the instruments to help achieve this balanced and accelerated growth of the economy. To attain the targeted GDP growth rate of 8 to 10 per cent as mentioned above, NMCC estimates that the share of manufacturing should be raised to the level of 30 to 35 per cent by 2020. NMCC suggests that the decade 2006-2015 be treated as the Decade of Manufacturing for India and India should target a growth

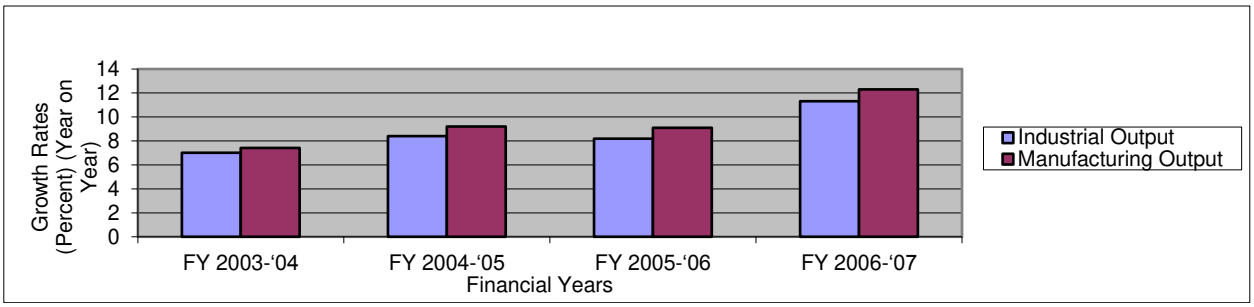
rate of 12 to 14 per cent during the period, so as to improve its contribution to GDP to the level as mentioned above. Thus, manufacturing sector has got a very vital role to play in the Indian economy in the days to come. Fast revival of manufacturing is essential for correcting the above imbalance in the allocation of manpower and hence achieving enhanced productivity and rapid economic development. In short, robust growth in manufacturing is an imperative for creation of better employment possibilities as well as overall economic growth and development. Because of the reasonably favourable macro economic environment and conducive policy decisions of the Government, there has been clear indications of a revival of the Indian industrial sector, particularly the manufacturing component within it. (Table III and Figure II).

Table-III: Growth in Industrial and Manufacturing Outputs – Gradual Rise (Percent) (Year on Year)

Particulars	FY 2003-'04	FY 2004-'05	FY 2005-'06	FY 2006-'07
Overall Industrial Output	7.0	8.4	8.2	11.3
Manufacturing Output	7.4	9.2	9.1	12.3

Sources: Estimates of Central Statistical Organization (CSO) (2007) and NMCC (2007)

Figure-II: Growth Rates of Indian Industrial and Manufacturing Outputs (2004-2007)



Sources: Estimates of Central Statistical Organization (CSO)(2007) and NMCC (2007)

In the Indian context, it is clear that superior performance of manufacturing can considerably enhance industrial growth and hence the economic growth. For instance, as is evident from Table 1.3 and Figure 1.3 above, during the fiscal 2006-'07, the surge in manufacturing could push the growth rate of industrial production to double digits from 8.2 percent (2005-'06) to 11.3 percent (2006-'07); the growth rates in respect of the manufacturing component during the said periods being 9.1 percent and 12.3 percent respectively.

INNOVATIVE MANUFACTURING PHILOSOPHIES FOR ENHANCED COMPETITIVENESS

In this era of globalization, the key to robust growth of manufacturing for an emerging economy like India lies in its competitiveness. India has got comparative advantage in many respects, like, experienced and English-speaking technical manpower, large pool of scientists, engineers and managers, reasonable endowment of natural resources and after all a very large domestic market. Though the potentialities of India are large enough to emerge as a manufacturing hub for the globalized world, the same can be materialized only with improvement in the competitiveness of the industry, particularly that of manufacturing. For enhanced competitiveness of manufacturing, the productivity needs to be improved which in turn largely depends on innovation – the driver of productivity. So, adoption of modern manufacturing philosophies and technology development on an ongoing basis assume tremendous significance for a country like India. The position of India in respect of competitiveness has been improving over the last few years. Among the BRIC (Brazil, Russia, India and China), India has got the highest position in respect of competitiveness. It was the only country in this group to improve its position in 2006 from that of 2005. The Global Competitiveness Index (World Economic Forum) of the BRIC countries for 2005 and 2006 points to the above fact. (Table IV).

Table-IV: Global Competitiveness Index (World Economic Forum) of "BRIC" Countries (Ranks)

Name of the Country	2005	2006	(Relative Change)
India	45	43	(+2)
China	48	54	(-6)
Russia	53	62	(-9)
Brazil	57	66	(-9)

Sources: Official Website of National Manufacturing Competitiveness Council (NMCC), GOI.

The latest (2007) Global Innovation Index (GII) developed by INSEAD and World Business shows a similar picture regarding the status of BRIC countries in innovation (Table V).

Table-V: Global Innovation Index (GII) (INSEAD) of "BRIC" Countries (2007)

Rank (GII of INSEAD)	Name of the Country (BRIC)	Score
23	India	3.57
29	China	3.21
40	Brazil	2.84
54	Russia	2.60

Sources: Dutta, Sumitra, INSEAD, and Caulkin, Simon. "The world's top innovators", *Indian Management*, Vol. 46, Issue 3, March 2007, p. 76.

Further, of the eight pillars of innovations underlying the INSEAD GII [viz. (i) institutions and policies, (ii) human capacity, (iii) infrastructure, (iv) technological sophistication, (v) business markets and capital, (vi) knowledge, (vii) competitiveness, and (viii) wealth], in respect of one pillar viz. competitiveness, India ranks fifth and is close to some of the most advanced nations of the world. (Table VI). In respect of none of the other seven pillars, however, India is occupying any of the first five ranks.)

Table-VI: Pillar of Competitiveness of GII (INSEAD) of "BRIC" Countries (2007)

Rank (GII of INSEAD)	Name of the Country	Score
01	US	6.48
02	Germany	5.47
03	Japan	4.92
04	UK	4.81
05	India	4.71

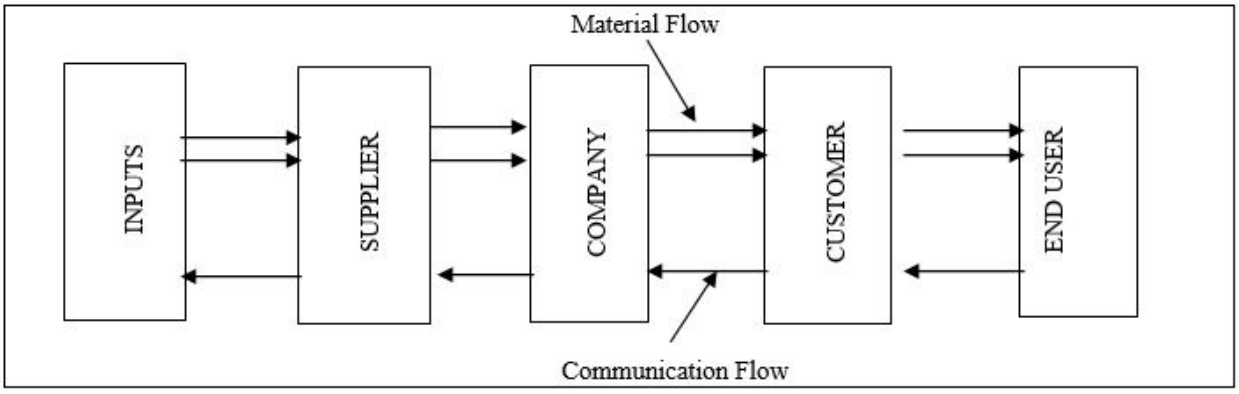
Sources: Dutta, Sumitra. INSEAD, and Caulkin, Simon., "The world's top innovators", Indian Management, Vol. 46, Issue 3, March 2007, p. 74.

From the foregoing discussions, it is evident that in India the performance of the industrial output in general and manufacturing output in particular have been gradually improving over the years. So also, the competitiveness of India vis-à-vis other countries of the world, particularly the BRIC countries has been on the rise. However, there is no scope for complacency because it is essential that the above pattern needs to be sustained and further strengthened many fold in the days to come, in view of the utmost rapidity of the developments especially the ever increasing competition in gloablized markets. Further, as noted earlier, except for one parameter viz. competitiveness, India's position as of now is not comparable internationally in respect of innovation.

4.1. Lean Manufacturing: an Effective Tool for Improving Competitiveness.

Lean Manufacturing, as the very term suggests, refers to removal of the excess or the unwanted from the manufacturing supply chain; the supply chain being the one which starts right from the raw material supplier and ends with the end-user or customer, after passing through various manufacturing processes. The supply chain is a system linking all parts of an organization such as the inputs, the intermediate activities, the distribution centers and the end user of the product. A supply chain typically involves a large number of activities; both value added and non-value added. (Figure III). The basic philosophy behind lean manufacturing is to make the supply chain leaner by eliminating or reducing to the extent possible the non-value added activities.

Figure-III: A Typical Supply Chain



Sources: Authors Compilation

As shown in Figure III, a supply chain begins at the inputs and ends at the output, with a forward flow of materials, a backward flow of information and flows of resources within the chain in a direction as required. In respect of manufacturing firms, the inputs are raw materials, intermediate stages include design, production, inspection and other processing activities and the output is the final value added products. The primary aim of a supply chain is value addition to a raw input, and delivering the resulting

output to the final user. However, in a supply chain, apart from the value addition activities, there may be non-value adding activities as well. Value added activities are those carried out on the input (material) that transform it to more closely resemble the final output. It is only the final output that has a value and only those activities that bring about the transformation from input to output are considered to be value adding activities.

4.2. Benefits of Lean Thinking: Some Empirical Evidence in the Indian Scenario.

It is in the above backdrop, concepts such as 'lean manufacturing' and its later variants like agile manufacturing assume significance. It is worth pointing out here that NMCC has included application of lean manufacturing as the No.1 item among the ten-point strategy identified by it for enhancing competitiveness of of SMEs in India. Besides, the empirical studies done in India point to the significant gains achieved through implementation of 'lean thinking'. For instance, in respect of a typical machine tool factory (MTF), the benefits from lean implementation have been really significant (Table VIII).

Table-VIII: Benefits of Lean Thinking – Performance Improvements Observed at "MTF" after the Implementation of Lean Manufacturing System

Parameters	After Implementing 'Lean'	Before Implementing 'Lean'
Lead times (products)	5-7 days	45 days
Lead times (major components)	2-7 days	30-60 days
Quality index (rejects and non-conformance levels)	0.3 % (close to 5 Sigma)	20%
Customer satisfaction	96%	44%
Inventory turns	11.5	1.45
Products	8	2
Models	27	7
Domestic dealers	54	12
International dealers	18	2
Manpower	640	840
Turnover	+ 496%	
Profits	+ 15%	
Cost reduction to customers	22-29%	

Sources: Baitmangalkar, Sanjeev (2004), "The lean mindset", *The Indian Management*, Vol. 43, Issue 11, Nov. 2004, pp. 76-80

4.3. Lean Manufacturing in India in the LPG Era: An Imperative.

Lean manufacturing has already emerged as one of the most powerful manufacturing strategies the world over. Studies have shown that lean thinking can bring about productivity and competitiveness of very high order through enhanced Return on Investment (ROI), shorter lead times, greatly reduced cost, improved customer service, and improved product quality. These benefits in turn ensure enhanced operational efficiency and smoother process lines for the respective firms; and further, improved competitiveness and economic growth for the economy as a whole. In India, robust growth in manufacturing is necessary for creating overall economic growth. As competitiveness is central to robust growth in manufacturing, the vital significance of lean manufacturing and other modern manufacturing strategies need not be overemphasized.

FLEXIBLE MANUFACTURING: FOR IMPROVED PRODUCTIVITY AND COMPETITIVENESS

World over, the immense capabilities of advanced manufacturing technologies (AMTs) in general and flexible manufacturing systems (FMSs) in particular have increasingly been recognized. In many of the advanced nations of the world, these modern philosophies are rapidly replacing the traditional manufacturing systems. In spite of such an appreciable growth rate in AMT adoption over the last few years, it has to be noted that India is still in its infancy in this regard; the huge investments required and the availability of cheap labour being the main inhibiting factors. Moreover, in view of the added significance of manufacturing competitiveness in India in the current scenario, as already discussed in the foregoing section, adoption of AMTs like FMSs has got special relevance.

5.1. Flexible Manufacturing Systems: Concept, Impetus for Change to FMSs

Despite the growing significance of FMSs, there is no universally accepted definition of the term FMS. The most important distinguishing feature of an FMS is the flexibility that it offers to the production process wherein it is employed. One of the most referred to definition of FMSs is the one given by Ranky who defines FMS as a system dealing with high level distributed data processing and automated material flow using computer-controlled machines, assembly cells, industrial robots, inspection machines and so on, together with computer integrated material handling and storage systems. The specific manufacturing systems wherein FMSs can be employed conveniently were identified as early as 1973. The following are the kind of situations as identified by Darrow:

- A variety of high precision parts are machined.
- A relatively large number of direct numerical control (DNC) machines are needed.
- Some form of automated material-handling system (MHS) is used to move the work pieces into, within, and out of the FMS

- On-line computer control is used to manage the entire FMS under conditions of varying parts, production mixes and priorities.

The main reason behind the new surge of attention directed to FMS and other forms of the automated factory is increased competition and this is quite intense in this era of globalization. The main incentives are reduced costs in production and adaptability to an ever changing environment. Automated systems such as FMSs have the potential to improve the position of firms on both the above counts. Other reasons include truncation of product life cycle, and increasing complexity of products. Klahorst has reported that those companies that have installed FMSs have reported the following results: (i) Benefits related to cost reduction (55 percent), (ii) Benefits relating to market response improvement (30 percent), (iii) Benefits related to flexibility in production (15 percent).Salomon and Biegel compare FMS with conventional manufacturing technology under states of risk and show that FMSs provide substantial productivity improvement.

In spite of the favourable signs of the surge in the Indian machine tool industry in general and the component of CNC machines in particular, India has remained almost isolated from the world economy. The vast and unparalleled changes taking place in the social and economic conditions the world over have not fully been appreciated by India so far. Though there has been considerable increase in the machine tool production over the years, the share of exports in the total production as well as the share of indigenous goods in the total consumption of machine tools have been constantly on the decline. The reasons for the above not-so-encouraging state of affairs as identified by Rao and Deshmukh (1994) are given in Exhibit 2.3. Rao and Deshmukh (1994) further points out that to achieve the above goals and catch up with the rest of the world, India should focus on technological advancements which would increase the productivity as well as quality of the country's products and services in the global market.

In spite of the various handicaps and weaknesses that India suffers in the adoption of FMSs, there are quite good scope of improvising the position of India in the days to come. The more recent developments, say, those of the post-reforms period, particularly those of the last few years (2000s), indicates a bright future for the FMSs, though there is a pretty long distance to traverse in this regard. The Government's policy of economic deregulation offers immense opportunities for the industry. Though the threat of global competition is there, with the huge resources of the country, it can produce comparatively cheaper goods and effectively compete in the world markets. In the current scenario, companies can raise huge investments through the capital market, because of easier access to these markets.

CLUSTERING AND NETWORKING: IMPROVED EFFICIENCY THROUGH OPTIMAL UTILIZATION

The significance of clustering and networking for enhanced efficiency through optimal utilization of resources is growing day by day. This is more relevant in the case of SMEs, the most dominant constituent among the manufacturing units and also, by and large, the backbone of Indian industry. Spatial concentration of concerns (often SMEs) of a certain product is called industrial clusters. Such a cluster tends to concentrate in the vicinity of large industries or in metros and big cities. A cluster provides the unit with a comprehensive facility to research and development. Clusters are based on various factors like product name and location, product manufacturing etc. (Example rubber products manufacturer in Kottayam, Kerala or the industrial pumps manufactures in Coimbatore, Tamilnadu etc.). There is increasing evidence throughout India that through clustering and networking SMEs can boost their competitiveness. India has got over 400 such clusters and about 200 artisan clusters. The UNIDO Cluster Development Programme (based at New Delhi) supports such initiatives of SMEs in India. On an average, as SMEs are disorganized and are lacking the capacity of collectively addressing their problems, the greatest of which being the inability to market their products. Currently, the mounting competition from foreign producers in the wake of globalization has intensified the need for more effective marketing of their products. The small firms need to take up aggressive marketing and to obtain national and international market linkages as well as support services to upgrade quality of their products in order to remain in the competitive global market. All these factors point to the utmost significance of clustering and networking. In such an arrangement firms should not be competitors in the market but should produce complementary goods. Members of a typical cluster (consortium) should be of similar size in terms of production capacity and ability to invest. Each individual consortium has to pool its resources to undertake various common marketing initiatives, because otherwise individual firms would not be in a position to undertake the same by itself due to the high costs involved. Although clustering activities were initially aimed at the domestic market, they proved themselves quite effective even to capture overseas markets. Common brochures, establishment of joint marketing offices across the country, appointment common marketing dealers and consultants, creation of common websites, joint advertisement, common warehouse, collective participation in several international exhibitions etc. are some of the measures being effectively followed by such clusters.

TOTAL QUALITY MANAGEMENT AND BETTER PERFORMANCE OF INDIAN MANUFACTURING

In fact, lean management and other continuous improvement approaches suggest capacity optimization instead of maximization. By adopting the Total Quality Management (TQM) philosophy, many capacity optimization and costing models can be used for better operational efficiency and competitiveness of manufacturing companies. Prominent among the large manufacturing companies have either adopted TQM or are mostly in the process of adopting it. For instance, the cost of idle capacity is a fundamental information for companies and their management of extreme importance in modern production systems. The effect of total quality management on firm performance has been investigated in many studies. Compared to large manufacturing firms, most SMEs are slow and often reluctant to adopt quality management practices. Sahoo and Yadav (2008) have empirically proved that TQM is positively related to manufacturing performance. Majority of the successful manufacturing companies have embraced TQM strategy and realized its invaluable contribution. Though TQM philosophy is mainly dominated by large firms, the fear of losing contracts from large manufacturing firms prompt SMEs to bring quality into their system to enhance their

efficiency and competitiveness. But, based upon current production system of manufacturing SMEs, implementation of a quality management system could be low cost and low maintenance with little documentation needed. Also, owners-managers of Indian SMEs often do not have enough managerial insights and organizational capabilities resulting in misapplication of TQM practices, which may result in product quality failure and increased expenditure. In India, there is an imminent need for smaller manufacturing companies also to adopt modern philosophies like TQM. With more and more manufacturing firms striving to remain competitive, it is being more difficult for a typical SME to exceed their rivals and outperform.

With ever increasing demand on manufacturing companies on quality, price and delivery, the most effective way to enhance the confidence of customers is through a structured certified quality management system. Many companies in India have become important players in large manufacturing supply chain networks and they either voluntarily or have been forced to apply quality management practices to gain and sustain competitive advantage. Given the importance of quality management practices, more importance is required for adoption of TQM manufacturing companies in India.

ENHANCING COMPETITIVENESS OF INDIAN MANUFACTURING: SOME GENERIC STRATEGIES

In view of the foregoing, it may be stated that innovation holds the key to increasing productivity. Productivity gains in turn hold the key to improved economic growth and standard of living. Further, there is an imminent need for adoption of modern philosophies like TQM. Some strategies for innovation for enhanced productivity and competitiveness are given below:

- It is essential that increased investment in R&D is made to facilitate technological innovations by the industry and the Government. While world over 02 per cent of their annual budget is earmarked for R&D, the same is only 1 per cent in India. Hence it needs to be enhanced urgently to at least 2 per cent with immediate effect.

- One top priority issue before the Government may be that of encouraging Advanced Technology Products, as these are having a sizeable world market. Another priority of the Government is to be that of promoting Advanced Manufacturing Technologies (AMTs) and design innovations. At the individual firm level efforts are to be taken for embracing AMTs or producing ATPs as far as possible.

- Because of the ever-increasing need for accelerating growth, profitability and customer service in an emerging economy like India in the ongoing LPG regime, there is an imminent need for the adoption of lean systems. Lean production needs to be encouraged among the industry, particularly among the SMEs – the backbone of Indian industry.

- Industrial automation efforts through FMSs adoption should be promoted in such a way that the goals of enhanced productivity and competitiveness are met effectively. Any FMS initiative to be successful needs maximum co-operation from the employees. Requisites measures for gaining the co-operation and support of the employees have be promoted.

- Above all, the Intellectual Property Rights (IPR) framework in the country needs to be strengthened further, because the contemporary trends in manufacture and technology are being driven by the forces of competition. In the new patent regime, it is vitally important for firms to acquire new knowledge not only for innovation but for attaining adequate level of competitiveness in a TRIPS-compliant IPR environment. Accordingly, in a globalized environment it is essential to effectively utilize IPRs, particularly patents for technology upgradation and growth, wealth creation etc.

- For any knowledge-driven industry, particularly the manufacturing industry, it is desirable to embrace a network model innovation and R&D, according to which industries go for collaboration with research institutes, universities and other counterparts for innovating their products and processes.

- Though innovation at the economy level is really important, the same has to start from the respective industry level and ultimately from the firms comprising the industry. A firm's competitiveness is significantly influenced by its ability to understand and embrace new product and process technologies. Thus, technological innovation within firms is all the more important strategically and so also, is the creation of new knowledge for (and from) innovation. This in turn may necessitate reformulation of its policies, reconfiguration of competencies and re-engineering of operations.

- It is highly advisable that India also administer a specialized society or institute to promote innovation. It is a fact that there are 106 countries in the world which have got some mechanism like the like the above. Currently, India is an exception in this regard.

- For successful technological innovation, it is not technology itself that matters. Rather, external factors like the market conditions as well as internal factors like organizational climate and human factors are equally important. On the one hand, firms have to constantly search potential market segments and on the other hand, they have to chalk out appropriate strategies to make their own internal staff abreast of the developments. Accordingly, an environment conducive for technological innovation should be created. Ongoing training in advanced technologies and IPR issues should be at the centre of such training classes.

- There is utmost significance of promoting clustering and networking among manufacturing units (particularly the SMEs) need not be overemphasized. It is a proven fact that such an arrangement can tremendously boost the competitiveness of manufacturing.

- Last but not the least, there is an imminent need for adoption of modern philosophies like TQM by the Indian industry, particularly the SMEs in India.

CONCLUDING REMARKS

In the ongoing scenario of globalization, to survive and prosper and also to take advantage of the emerging opportunities, it is imperative that manufacturing units in India, particularly the SMEs, improve their competitiveness. This in turn calls for innovation of technology, products and processes on an ongoing basis and further productive R&D which can deliver patentable innovations. The focus of firms for industrial research should target on acquisition of more complex knowledge base that can support innovation. Besides, modern philosophies like TQM, Lean Manufacturing etc. need to be adopted by manufacturing companies in India.

REFERENCES

1. Abdel-Malek, Layek; Das, Sanchoy K; and Wolf, Carl; "Design and implementation of flexible manufacturing solutions in agile enterprises", International Journal of Agile Management Systems, Vol. 2, No. 3, MCB University Press, USA, 2000, pp. 187-195.

2. All India Management Association (AIMA), *Innovation for Corporate Renaissance*, Excel Books, New Delhi, First Edition, 1997.

3. Baitmangalkar, Sanjeev., "The lean mindset", *Indian Management*, Vol. 43, Issue 11, Nov. 2004, pp. 76-80.

4. Cardinali, Richard., "Flexible Manufacturing systems: a primer on enhancing productivity while controlling cost", Logistics Information Management, Vol. 8, No. 6, MCB University Press Limited, USA., 1995.

5. Dutta, Soumitra., INSEAD and Caulkin, Simon., "The world's innovators" *Indian Management*, Vol 46, Issue 3, March 2007, pp.71-79.

6. Granstrand, Ove, *The Economics and Management of Intellectual Property – Towards Intellectual Capitalism*, Edward Elgar, Cheltenham, UK, 1999.

7. Henry, Jane., and Mayle, David., *Managing Innovation and Change*, Sage Publications, New Delhi, Second Edition, 2002.

8. Jagtap, Milind., Agrawal, G. and Rajkumar, S., "A Roadmap to Lean Manufacturing", *Industrial Engineering Journal*, Vol. XXXV No. 6, June 2006, pp. 05-09.

9. "Lean Manufacturing: Is it worth it ?", *The Economic Times*, 22 February, 2007.

10. Kaighobadi, Mehdi and Venkatesh, Kurapati; "Flexible Manufacturing Systems: An Overview", International Journal of Operations and Production Management, Vol. 14, No. 4, MCB University Press Limited, USA., 1994, pp. 26 – 49.

11. Katira, Parag, and Narkhede, B.E., "Lean Thinking: A Critical Review", *Industrial Engineering Journal*, Vol. XXXV No. 5, May 2006, pp. 37-41.

12. Mechling, George W.; Pearce, James W.; and Busbin, James W.; "Exploiting AMT in small manufacturing firms for global competitiveness", International Journal of Operations and Production Management, Vol. 15, No. 2, MCB University Press Limited, USA., 1995, pp. 61 – 76.

13. Merchant, Amyn., and Pinney, Benjamin., "Disposable factories", *Indian Manufacturing*, Vol.46, Issue 2, February 2007, pp. 73-75.

14. Mohanty, R.P., and Parundekar, S., "Current Status of and Potential for Automation in the Indian Manufacturing Industries", Working Paper No.1, National Institute for Training in Industrial Engineering", Vihar Lake, Bombay, India, 1990.

15. Nagabhushana, T.S., and Shah, Janat.; "Manufacturing priorities and action programmes in the changing environment – An empirical study of Indian industries", International Journal of Operations and Production Management, Vol. 19, No. 4, MCB University Press Limited, USA., 1999, pp. 389 – 398.

16. Narain, Rakesh; Yadav, R.C.; and Antony, Jiju., "Productivity gains from flexible manufacturing – Experiences from India", International Journal of Productivity and Performance Management, Vol. 53, No. 3, Emerald Group Publishing Limited, 2004, pp. 109-128.

17. Narayan, Tarun and Chopra, Lakshmi S., "Ready for the Next Leap", *Indian Management*, Vol. 45, Issue 3, March 2006, pp. 16-20.

18. Rao, K.V. Sambasiva; and DeshmukhG.; "Stregic Framework for implementing manufacturing systems in India", International Journal of Operations and Production Management, Vol. 14, No. 4, MCB University Press Limited, USA., 1994, pp. 50 – 63.

19. Small, M.H. and Chen. I. J.; "Economic and strategic justification of AMT. Inferences from industrial practices", International Journal of Production Economics, Vol. 49, 1997, pp. 65-75.

20. *The National Strategy for Manufacturing*, National Manufacturing Competitiveness Council, Government of India, New Delhi, March 2006. (Available at www.nmcc.nic.in)

21. Vedpuriswar, A. V., Chowdhary Nagendra & Ghori, A. S. K.,"Managing Technological Innovations", in Vedpuriswr, A. V (Ed.), *The Practice of Innovation,* ICFAI Books, Hyderabad, 2002, pp. 110-122.

22. Zhang, Qingyu; Vonderembse, Mark A; and Cao, Mei.; "Achieving flexible manufacturing competence – The roles of advanced manufacturing technology and operations improvement practices", International Journal of Operations and Production Management, Vol. 26, No. 6, Emerald Group Publishing Limited, 0144-3577, 2006, pp. 580-599. (Available at www.emeraldinsight.com)

*****

BLACK BOARD TO SMART BOARD: A SNAP-SHOT ON TECHNOLOGICAL ADVANCEMENTS IN TEACHING

Mahesh V. J.[6] Ch. Bala Nageswara Rao[7]

ABSTRACT

In today's business scenario technology plays an important role in all the operations. All most all the governments around the world are concerned about such technological developments and advancements. This reflects in both profit and non-profit organizations. Services are plenty in nature; but no replacement for educational service, as it is one of the primary rights of every Indian citizen. Of course, technology in education also matters. Technological advancements shaped and build up education industry around the world. For the past few years we have witnessed the drastic technological changes that contributed to our education system and its usefulness.

An innovative technology not only helps the professors, students and parents but also the corporate trainers and trainees. Training is one of the best and important steps each corporate follows. This helps them to make over their candidates to par with internal policies as well as global standards. The trainer as well as a professor almost do the same job, the only difference is a trainer acts as a facilitator, who creates an environment to elicit the potentials inside a trainee; a professor teaches new concepts to the students. Both are intended towards creating good leaders, filled with creativity and innovation.

Here is an attempt to say how technological advancements are helpful for educational facilitators. This article introduces the different technological advancements in respect to teaching aids, from the Black Board to Smart Board.

KEYWORDS

Traditional, Modern Teaching, Technology, Black Board, and Smart Board etc.

INTRODUCTION

A business life cycle depends on how well we upgrade our business in the market. In today's competitive business scenario it is necessary to put our heart and soul to keep our business shine. Business is an art to satisfy its customers as well as science to know how to make money by upgrading ourselves. Strategic Chemistry for both Profit and Non-Profit organizations are same. The more and more you satisfy your customers the more and more you win.

Education is the base for economic growth as well as social transformation for any country. Among all the key indicators of socio-economic development like economy's growth rate, literacy rate, birth rate, death rate and Infant Mortality Rate (IMR), the literacy rate of the country is one of the most vital one as the rise and fall of others largely depend upon country's literacy rate. In India, high literacy rate leads to low birth rate as well as low IMR and it also increases life expectancy rate. So, the importance of education industry in India can be understood.

The education system in India is much more improved these days and is one of the leading ones in the world. It is also one of the biggest contributors to the economic growth of the nation. Besides various government initiatives, the role of the private institutions in the development of education industry in India cannot be denied.

We may have doubt what technology can do in Indian Education System. Yes! Technology can do more and more. The recent changes happened are the best to understand how important the technology is in education system. In those days how many PTA (Parents Teachers Meeting) meetings people might have attended? How many times they have gone for mark sheets and progress report? How many business and personal meeting people would have got cancelled/ postponed to meet the professors and teachers to know the status of their children? But let's look at what is happening now? There is a convenience of all the above updations of their query and information by the click of a mouse either at home or office. Thanks to technology and its advancements.

TRADITIONAL TEACHING AND MODERN TEACHING METHODS

Criticism always follows every well-established system. Two different ways of thinking in education had been waved the minds of both parents and students, which has taken into another scenario. Some believe that modern methods are better than the traditional method of teaching but yet these two methods are both a successful way as the methods in teaching have the same purpose, to deliver the same message to the students. Therefore there are pros and cons to it as well in these ways of teaching.

ROLE OF TECHNOLOGY IN MODERN TEACHING

The time of black boards with chalk and notice boards are becoming antique. Since the quality of the lessons given by a teacher is a crucial factor in teaching, it's always better to have a technical support for making the sessions more interactive. Therefore necessity of modern teaching and training aids are increasing day-by-day:

[6]Assistant Professor, Saveetha School of Management, Tamil Nadu, India, vj.mahesh@yahoo.com
[7]Director, Saveetha School of Management, Tamil Nadu, India, nani_sweety625@yahoo.com

- To make the learning system more interesting and interactive.
- To make the learning and teaching process very easy.
- Helps to give live demo of stock markets and investments.
- For more motivational and self-training videos.
- To get more supportive study materials.
- To get necessary software.
- Business opportunities for both budding entrepreneurs and graduates.
- To know the recent trends and developments in industry.

DIFFERENT TRAINING METHODS FOR TRAINEES AND STUDENTS THROUGH TECHNOLOGY

- Business Games,
- Live industry awareness,
- Video chat with industry experts,
- Online aptitude and attitude test,
- Soft skill development,
- Business case analysis,
- Video case analysis,
- Verbal and Accent Training,
- Creativity Games,
- Inspiring and Motivational video sessions,
- Industry relations and networking,
- Chat with entrepreneurs and Business Magnets,
- Personality development,
- Self-evaluation,
- Social Networking,

FROM BLACK BOARD TO SMART BOARD - VARIOUS TEACHING AIDS

Black Board & Green Board

I Still remember the day my teacher hold my hand and drawn a picture of an apple on the black board and taught me "A for Apple". Everybody's academic life starts there. A blackboard or chalkboard is a reusable writing surface on which text or drawings are made with sticks of calcium sulphate or calcium carbonate, known, when used for this purpose, as chalk. Some old public companies were using black board to draw and teach organizational hierarchy and other information to employees.

OH Projector

When I started my high school, history teacher took us to the library, with some glass sheets, and shown map of different states. With lots of curiosity I asked teacher, what is the machine all about which is fixed over there? That was OH Projector, a technical advancement. An **Over-Head Projector** is a variant of slide projector that is used to display images to an audience. Corporate people also started using this long back as soon as the technology upgraded.

Desk Top Computer

As all we know computers are the great innovation of technology. This can be used in any kind of business. It has an inseparable role in the education field. A desktop computer is a personal computer (PC) in a form intended for regular use at a single location, as opposed to a mobile laptop or portable computer.

Education institutions were using these computers only to save and retrieve valuable data related to the academics, not for the class delivery. But teachers are permitted to use this for internet surf and academic updates. However computers flashed new changes to the learning process. Most modern desktop computers were using in all corporate companies to document their work.

White Board

This is a new face of black board with some specifications. A whiteboard is a name for any glossy, usually white surface for non-permanent markings. This was quite interesting because people were using this as a board to write as well as to project the presentations.

The popularity of whiteboards increased rapidly in the mid-1990s and they have become a fixture in many offices, meeting rooms, school classrooms, and other work environments. As compared to black board this method needs special care and training to use.

LCD Overhead Displays

In the early 1980s–1990s, overhead projectors were used as part of a classroom computer display/projection system. The big size and heavy weight which takes more space than the usual were the enough reasons to give red alert to OH Projectors. LCD overhead projectors took over the corporate and education industry as the whole by then. Liquid-Crystal panel mounted in a plastic frame was placed on top of the overhead projector and connected to the video output of the computer, often splitting off the normal monitor output.

This was so easy for the facilitator for the lecturing and conducting seminars. Such systems allow users to make animated, interactive presentations with movement and video, typically using software like Microsoft PowerPoint.

Computer Labs

That was the first time I saw a series of computers set in a special room adjacent to our library. We were so happy to operate a computer first time. That was a great experience for all of us to make our studies more informative and fun. A computer lab is a cluster of computers that usually are networked and available for use by students, trainers and faculties in schools and corporate. Almost all computer labs offer users' access to the Internet and provide software that students can use to do research and complete their homework or that others, such as travelling business people, might need for other purposes.

Laptops

A small moving computer, laptop was so comfortable for trainers, trainees, professors and students. A laptop computer is a personal computer for mobile use. A laptop has most of the same components as a desktop computer, including a display, a keyboard, and a pointing device such as a touchpad, a pointing stick, and speakers into a single unit. A laptop is powered by mains electricity via an AC adapter, and can be used away from an outlet using a rechargeable battery.

Wi-Fi

Combination of Wi-Fi and Laptop made the study very easy. Most of the corporate and educational institutions moved to Wi-Fi campus. This was so helpful for the trainers and students to get accurate information on a single click. Wi-Fi provides service in private homes, high street chains and independent businesses, as well as in public spaces at Wi-Fi hotspots set up either free-of-charge or commercially.

Organizations and businesses, such as airports, hotels, and restaurants, often provide free-use hotspots to attract customers. Enthusiasts or authorities who wish to provide services or even to promote business in selected areas sometimes provide free Wi-Fi access.

Smart Board

A smart technology has come through Smart Board, a combination of all teaching aid like white board, computer, Projector, internet or Wi-Fi. The Smart is a line of interactive whiteboards produced by the Calgary, Alberta-based company Smart Technologies. The Smart Board is an interactive whiteboard that uses touch detection for user input – e.g. scrolling, right mouse-click – in the same way normal PC input devices, such as a mouse or keyboard, detect input.

A projector is used to display a computer's video output on the interactive whiteboard, which then acts as a large touch screen. This interactive whiteboard typically comes with four pens, which use digital ink and replace traditional whiteboard markers. Such smart boards replaced all the teaching and training aids were there in the educational institutions and corporate so far. Greater student engagement makes the classroom more student-centered, an abundance of pre-made lessons on the Internet that you can customize for your classroom made everybody to accept this new technology advancement.

Advantages

- Greater student engagement makes the classroom more student-centered.
- An abundance of pre-made lessons on the Internet that you can customize for your classroom.
- Also you can interact with the various buttons on the web site you choose. Kids love to go up and click on a bird song, for example, or start a penmanship animation going.
- The smart board is large, and really commands attention so children stay focused.
- Large animations can show the relationships between objects, such as with planet orbits in the solar system, or the interaction among molecules.
- Another great feature is that you can use colored markers that can be used to circle things on the screen. Kids loved that since they could point out a spot on a map, or a grammar mistake, etc. for the whole class.

Disadvantages

- The Smart Boards can be a bit touchy. You had to orient the board if someone bumps it. The markers could be off by quite a ways if you didn't orient the board frequently. This can be annoying.
- Only one student can be at the board at one time.
- Unless the person is skilled at writing while facing the classroom you will have your back to the classroom while you're writing on the board.
- When your projector goes out you can't use the board so you need a backup lesson just in case that happens.
- The smart board system is heir to the same problems that a computer and projector setup has, since you need a laptop to find the web sites and a projector to project the images on the Smart Board. Sometimes the web site is down, or plugs don't work, etc.

EDUCATIONAL SOFTWARES

Technological development not only for the teaching aids but also the administrative works. Major developments in educational software in the early and mid-1990s were made possible by advances in computer hardware. With the spread of the internet in the second half of the 1990s, new methods of educational software delivery appeared.

In the history of virtual learning environments, the 1990s were a time of growth for educational software systems, primarily due to the advent of the affordable computer and of the Internet. Today Higher Education institutions use virtual learning environments like Blackboard Inc. to provide greater accessibility to learners.

CONCLUSIONS

Any invention by human being has its own advantages and disadvantages. World is blessed with Technology, because it can make people to cope with the changes soon. We should be thankful to the contribution of technology to the Education system. But still people say "*sorry for the technical error*", which reveals the fact that even technology can go wrong. Though we started our education from a black board, years ago, there is no drawback to point out in such traditional methods.

Still we remember our first interaction with a back board than a smart board. I doubt how many of us can remember which slides run by which faculty at very first time in a smart board. It's not our mistake, as we all know no people, no firm and no organization are responsible for "*technical errors*".

REFERENCES

1. www.wikipedia.com
2. Johnson, Judi. (2003). "Then, Now and Beyond… A Look at the Past 30 Years of Educational Software", Learning & Leading with Technology, Vol. 30, No. 7.
3. Buckleitner, Warren. (1999). "The State Of Children's Software Evaluation--Yesterday, Today and In the 21st Century", Information Technology in Childhood Education, pp. 211-220.
4. Virvou, M.; Katsionis, G., and Manos, K. (2005). "Combining Software Games with Education: Evaluation of its Educational Effectiveness", Educational Technology & Society, 8 (2), 54-65.
5. Khalifa, Said; Bloor, Chris; Middelton, Walter, and Jones, Chris. (2000). "Educational Computer Software, Technical, Criteria, and Quality", Proceedings of the Information Systems Education Conference.
6. (2002). "An Environmental Scan of Children's Interactive Media from 2000 to 2002", (An Executive Summary Prepared by Just Kid Inc.).
7. Dostál, J. (2009). "Instructional Software and Computer Games - Tools of Modern Education", Journal of Technology and Information Education, Vol. 1 No. 2, pp. 24 – 28, ISSN 1803-537X (Print). ISSN 1803-6805 (On-line).
8. Seels, B. (1989). "The instructional Design Movement in Educational Technology", Educational Technology, May, 11-15.

*****

A STUDY ON ONLINE MARKETING COMMUNICATION TOOLS

Janaki[8]

ABSTRACT

Recent developments on internet have created new possibilities of doing business and communicating with customers. And these technology developments have led to the foundation of e-commerce. E- Commerce sales kept growing in the recent years and it has been foreseen by researchers that this growth will continue even more in the next years. Consumer behavior online has changed as well and online users have become all-powerful, due to large numbers and promiscuous – consumers visit a lot of websites, but purchase from just a few. Also, the new social consumer uses the internet to be connected and receive information. As a result, internet became a new intermediary between companies and their customers. The purpose of our report is to provide a better understanding on the effectiveness of each online marketing communication tools.

KEYWORDS

Communication, E-Commerce, Online Marketing, and Customer etc.

INTRODUCTION

Organizations engage with a variety of audiences in order to pursue their marketing and business objectives. Engagement refers to the nature of the communication that can occur between people and between people and machines. It refers to the use of communication tools, media and messages in order to captivate an audience, often achieved through a blend of intellectual and emotional engagement or stimulation. Engagement may last seconds, such as the impact of a stunning ad, the sight of a beautiful person or the emotion a piece of music might bring to an individual. Alternatively, engagement may be protracted and last hours, days, weeks, months or years, depending on the context and the level of enjoyment or loyalty felt towards the event, object or person. Marketing communications tools to engage with their various audiences. These audiences consist not only of people who buy their products and services but also of people and organizations who might be able to influence them, who might help and support them by providing for example, labor, finance, manufacturing facilities, distribution outlets and legal advice or who are interested because of their impact on parts of society or the business sector in particular.

A variety of marketing communications tools to engage with their various audiences. These audiences consist not only of people who buy their products and services but also of people and organizations who might be able to influence them, who might help and support them by providing for example, labor, finance, manufacturing facilities, distribution outlets and legal advice or who are interested because of their impact on parts of society or the business sector in particular. The organizations mentioned earlier are all well-known brand names, but there are hundreds of thousands of smaller organizations that also need and use marketing communications to convey the essence of their products and services and to engage their audiences. Each of these organizations, large and small, is part of a network of companies, suppliers, retailers, wholesalers, value-added resellers, distributors and other retailers, which join together, often freely, so that each can achieve its own goals.

INTERNET & E-COMMERCE

With the emergence of new communication channels via the Internet, we have seen new ways that marketing promotions can be launched and new ways that marketing attacks can be initiated. The Internet World Stats, total number of internet users reached to approximately 2 billion, which equals 28.7% penetration rate of world population. Today, the internet has become an important part of our daily routines. We use internet to make shopping, to socialize, to access information, for entertainment or many other purposes.

These developments have also brought changes in the way of doing business and led to the foundation of electronic commerce. E-commerce as "Both financial and informational electronically mediated transactions between an organization and any third party it deals with". By the nature of business transactions, e-commerce is classified into business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C), consumer-to-business (C2B), and intra-organizational e- commerce B2C, the focus of our research, "commercial transactions between an organization and consumers".

E-commerce took the attention of companies and in the past years many companies were present online and made investments on e-commerce. In the same time, advancements in information and communication technologies also enabled customers to use internet wherever and whenever they want. E- Commerce easily got accepted by users because of latest developments on internet and internet enabled devices such as mobile phone, computers, and tablet computers. One of the main reasons for the growth of B2C e-commerce is increasing number of internet users and also there are other effects that shouldn't be underestimated such as e-commerce made it easy to shop and convenient to find more information about products.

[8]Assistant Professor, Tamil Nadu, India.

ONLINE MARKETING

Today, most of the companies adopted internet as a part of their marketing communications in their marketing strategies. Besides, being a new platform for buying and selling, internet has also become a new intermediary for companies to promote their businesses. The common term to describe marketing through online medium and terms such as hypermedia marketing, digital marketing, online marketing and e-marketing, are used by different researchers. Online marketing can be in different forms and can include different online techniques, such as Search Engine Marketing, online partnership, social media, online advertising, email marketing.

These online marketing techniques have become vital communication tools for the marketing department of a company to promote its websites, services and products in the online environment. Internet offers many opportunities for companies and it can be a useful platform for their marketing activities, such as to spread information, attract new customers, retain existing ones and even to improve relationship with existing customers by online customer relationship management. "Online marketing communications has grown to be an important part of a company's promotional mix".

ONLINE CUSTOMERS

Now, in the 21th century, borders represented by gender, occupation and education in using or navigating the Internet and other digital mediums have been sponged away by habit, supported by changes in system technologies. So surfing the Internet, texting a mobile message or reading an online magazine is available to and even used by elderly, children or unemployed and technologies have become more mobile, real- time and interactive to support those behaviors. By now, it is a common knowledge that consumers of all ages shop online, point out, college students aged between 18 and 22 are the "hottest" market and can be the main customers to generate revenue and growth for online sales.

They are interested in the latest products and developments, are very easily accepting and adopting new trends. The common trait of this age group is that although college students are avid information seekers though the internet, the conversion rate to online buyers is very low, only 4.9 % from general online visitors buy also the products online. With short attention spans and high number of choices, marketing communication has to be more efficient.

EFFECTIVENESS

"New technologies have changed the ways customers and companies relate to one another and have challenged the traditional process of transactions and the way communications between consumers and companies are managed". When evaluating these new technologies, it is important to consider the advantages and disadvantages of traditional and new channels as well as translating them into effectiveness, from a managers point of view companies are not using the whole potential of online marketing tools although they perceive them as effective.

Expresses five wanted outcomes from a marketer's point of view attract customers, engage customers, retain customers, learn about customers and relate to customers website, engage them to turn into paying customers and also retain them to keep returning to your website. "Online communications techniques used to achieve goals of brand awareness, familiarity and favorability and to influence purchase intent by encouraging users of digital media to visit a web site to engage with the brand or product and ultimately to purchase online or offline through traditional media channels such as by phone or in-store".

ONLINE MARKETING COMMUNICATIONS

To answer this question we have selected the research of Danaher and Rossiter where they listed fourteen attributes that have been tested on different types of offline and online communication channels. We will use the same list to be able to describe online marketing communications attributes:

> a) Reject, b) Enjoyable, c) Trustworthy, d) Informative, e) Objectionable, f) Entertaining, g) Ignore, h) Annoying, i) Acceptable, j) Entering, k) Reliable, l) Appropriate, and m) Time-consuming.

The attributes have been extensively tested by the previous research and have been understood to have a positive or negative effect on the customer interpretation of different offline and online communication channels. By our own understanding and judgment, the attributes have been singled out and awarded a positive or negative perception on the internet as a B2C communication channel.

MARKETING COMMUNICATION TOOLS

The list of online marketing tools which are used to attract customers to the website. We have selected the online acquisition tools such as:

Opt in E-mail: A wide variety of e-commerce marketers are using permission based e-mail communications to notify prospects of promotions and services, acquire new customers, increase sales, and, most importantly, develop and nurture an ongoing dialogue and relationship with their Customers.

Search Engine Marketing: SEM is an internet marketing that increases the ranking of the website in search engine and brings more users and the bandwidth. More than half of all visitors come from a search engine rather than from a direct link.

Online PR: Maximizing favorable mentions of your company, brands, products or web sites on third-party web sites which are likely to be visited by your target audience, each social media application usually attracts a certain group of people and firms.

Online Partnership: Affiliate marketing is one of the useful tools of online partnership to create website traffic. Affiliate marketing programs help firms to increase their reach and acquire other firm's customers when the firms agree to refer them.

Interactive Ads: Display ads help websites to build traffic and it is used to create brand awareness, familiarity, and favorability and purchase intent.

Viral Marketing: It harnesses the network effect of the internet at can be effective in racing a large number of people rapidly.

Online Behavior: Our respondents have stated that they use Internet on a daily basis with time ranging from one hour to 8 hours. The most common response involves around 3 to 4 hours / daily. When we asked about their internet routine, all students have said that they first check their e-mail account and their social networking profiles. All of them have named Face book as a common website for interaction and their private personal e-mail as primary source to communicate and stay informed. Information search for school or for hobbies is also mentioned as an option in their surfing routine. Entertainment purposes and buying online have been also mentioned.

ONLINE COMMUNICATION EXPERIENCE

As a participant in online communication with the companies, an overwhelming majority see themselves as not taking part and not answering to different ways of communicating. Asked freely about the Internet as a way of communication with the companies, respondents gave attributes as follows „effective", „annoying", „useful", „indifferent" or „impersonal". Most of the respondents thought of Online Ads or spam e-mail when asked about this sort of communication.

PURPOSE OF RESEARCH

Our research revolves around the internet as a communication channel from companies to visitors and potential customers. From a company's point of view, the internet is used as marketing channel and companies expect to get return from their e-efforts, but there is little research that takes the customer's point of view. How effective are online marketing communication tools in attracting customer's Effectiveness of the online marketing tools.

INTERNET AS A COMMUNICATION CHANNEL

The most common use of the internet is for information search and private communication. Although the respondents are aware of B2C communication, they have little understanding of it and usually regard it as pop-up commercials that often „irritate". They do not see the internet as a channel to communicate with companies, but at the same time they look for information about companies online. So, having a website is crucial for any company and online presence is self-understood in the form of commercials. Our respondents have shown a low level of interaction with companies via online. The most common cause of interaction was hobby related, information search or intention to buy products (in this order). These three reasons have been then followed through known sources, for example search engines, already known and visited websites and referral or third-party information. Third-party information sources are mentioned as referrals from a friend via social media and established brand-websites.

CROSS CASE ANALYSIS

Our research has ranked the most common attributes that describe the opinion and image of students about internet as a communication channel for B2C communication. From our choice of 14 attributes five stand out, as presented are: Informative (43 total points), Enjoyable (40 total points), Entertaining (36 total points), Convenient (32 total points), Easy-to-reject (25 total points). Informative is the first one to describe the internet as a communication channel, in our respondent's opinions. It has been often placed on the second position in the ranking, as the internet is seen as a fast and good information source.

Even more, supported by the research of Rowlands et al., the students today can't imagine a world without internet and the World Wide Web is the first stop in their search of information. The „Google generation" as he puts it. To support their own motivation of choosing informative, students have argued that: "Everything I want to know is there. I just go and look for what I want."

Enjoyable is the second favorite attribute to describe internet as a communication channel, but also as a way to receive information. Most of the respondents have ranked this attribute on 3rd or 4th place. „Enjoyable" is linked also to „entertaining" as this two stay close together when it comes to communication channels. Fair enough, our respondents support this theory and ranked 3rd „entertaining". With a small difference of only 4 points between these two (due to different ranking positions) we can state that indeed „enjoyable" and „entertaining" are very important advantages for internet as a communication channel.

The importance of these two attributes in the form of multimedia features that can increase effectiveness of customer interaction. Convenient is seen as a suitable attribute to describe the internet as well. What should be pointed out is that although it has gathered only 7 nominations in our ranking, the positions were always 1st or 2nd. Four students have chosen this attribute first in their mind when they think of the internet as a communication channel. This can be easily understandable, as internet is offering the liberty of non-stop surfing and flexibility to the reader to find out exactly the information he or she wants.

In many cases, while interviewing our respondents, we have noticed that convenient is related to time availability and willingness to receive the communication message. Respondents see internet as a flexible and easy-to-reject source of information and communication, but, as argued by Rowland's et al., the „Google generation" does not possess more skilled insight into critical and analytical interpretation of the information transmitted to him or her though this media. So we can deduct that our students" description of the internet as a „convenient" tools of communication refers more to the time flexibility and also ease to receive or ignore the communication. Another point that captured our attention was a clear preference of the female students for certain attributes from our 14-attributes list. It appears that „enjoyable" and „informative" have been chosen very often as describing the internet. Also, what does not appear in our ranking, but is important for our female respondents, is time-consuming as a negative attribute of the internet.

So, it is clear that women see the internet as rich in information and a pleasant way of receiving that information, but they seem to be stressed by the amount of time that it takes out their routine. Taking a look at the other attributes that were just rarely used to describe the internet, their absence does not mean that they are not important. For example, „objectionable", "appropriate" and „trustworthy" have been scored only once. This can be translated into lack of confidence of the information that is presented through this channel, but in the same time by not selecting „objectionable", we see that respondents are very used to this communication and even if they do not trust it, they receive it.

The issue of trustworthiness has been widely brought up every time internet communication is discussed and it represents the biggest challenge in online communication. The only reason for which internet has not taken over the first position in communication channels is because traditional channels still retain trust and reliability of information as main description attributes. The general overview of internet as a communication channel has been described in positive attributes as „entertaining" and „convenient". In the same time, „informative" resulted on the top position; show that consumers see the internet firstly as unilateral information channel and their first activity online is to search and read information (cross case analysis).

CONCLUSIONS

This paper has tried to look into the effectiveness of the internet as a communication channel and also into the effectiveness to attract customers with means of numerous online marketing tools. They rarely use this channel to communicate with companies and it is mostly for hobbies or personal interests. They see themselves as passive in B2C communication, but they are aware of it. It is very important for marketers, as communication initiators, to mention that most respondents understand advertising as communication received from companies. They feel bombarded with information, but are happy when they receive something they are interested in. Because of the frequency and quantity of information received via internet, consumers are very mistrusting towards these channel and do not find it appropriate for direct B2C communication. As to describe internet as a communication channel: informative, enjoyable, entertaining, convenient and easy-to-reject have been the first attributes to stand out. These only strengthens the available theory of a user that sees internet surfing and communication as leisure activity that has to be „fun" and „easy". In any sort of online marketing strategy attributes as entertainment or enjoyable have to be present and communication should be made through customers trusted sources in these manner, no matter the set of online tools, attracting the customer will be made easier.

REFERENCES

1. Kalakota, Ravi. Frontiers of Electronic Commerce, Pearson Education, New Delhi.

2. Rowland's, I.; Nicholas, D.; Williams, P.; Huntington, P.; Field house, M.; Gunter, B.; Withey, R.; Jamali, H. R.; Dobrowolski, T., and Tenopir, C. (2008). Emerald Group Publishing Limited, pp. 290-310.

3. AB. Hamid, N. R. 2008. "Consumers' Behaviour towards Internet Technology and Internet Marketing Tools", International Journal of Communications, 2**,** pp. 195-204.

4. Baker, M. J., and Hart, S. (2007). The Marketing Book, Butterworth-Heinemann.

5. Chaffey, D.; Ellis-Chadwick, F.; Mayer, R., and Johnstion, K. (2009). Internet Marketing: Strategy, Implementation and Practice, Financial Times Prentice Hall.

6. Morimoto, M., and Cang, S. (2006). "Consumers' Attitudes toward Unsolicited Commercial E-Mail and Postal Direct Mail Marketing Methods: Intrusiveness, Perceived Loss of Control, And Irritation", Journal of Interactive Advertising, 7**,** pp. 8-20.

*****

ANY TIME MONEY: A CONCEPTUAL FRAMEWORK

N. Anjala[9]

ABSTRACT

This paper presents the impact of Automatic Teller Machine or Any Time Money (ATM) allows a bank customer to conduct their banking transactions in the world. It is often the case of inventions. Many inventors contribute to the history of an invention, as is the case with the ATM. Read each page of this article to learn about the many inventors behind the automatic teller machine or ATM. Technology Adoption Life Cycle model to develop a framework for technology evolution in e-banking.

KEYWORDS

Automatic Teller Machine, Any Time Money, Technology, and Banking etc.

INTRODUCTION

The evolution of the e-banking industry can be traced to the early 1970s. Banks began to look at e-banking as a means to replace some of their traditional branch functions, for two reasons. Firstly, branches were very expensive to set up and maintain due to the large overheads associated with them. Secondly, e-banking products/services like ATM and electronic funds transfer were a source of differentiation for banks that utilized them. Being in a fiercely competitive industry, the ability of banks to differentiate themselves on the basis of price is limited.

Technology has introduced new ways of delivering banking to the customer, such as ATMs and Internet Banking. Hence, banks have found themselves at the forefront of technology adoption for the past three decades. It is imperative for banks to align their strategies in response to changing customers' needs and developments in technology.

ATM means neither "Avoids Travelling with Money" nor "Any Time Money" but certainly implies both. Slim ATM cards are fast replacing confounding withdrawal form as a convenient way of getting your money from banks. In a way, they are rewriting the rules of financial transaction. A smart person no longer needs to carry a wallet-full of paper money on his person. All he needs to do is fish out an ATM (Automated Teller Machine) card insert it in the slot, punch in the few details and go home with hard cash. The Indian ATM industry has seen explosive growth in recent times.

Our research aims to fill a gap in the current e-banking literature. This paper uses the Revised Technology Adoption Life Cycle model to develop a framework for technology evolution in e- banking. The following section reviews existing literature on dynamic innovation models and technological developments in banking. We argue that a modified version of the model provides a useful blueprint for strategies that constitute success at different stages of a discontinuous technology's evolution i.e. ATM and internet banking.

LITERATURE

In trying to find a framework to explain the evolution of e-banking technology, and some of the reasons behind successful implementations of e-banking strategies thus far technological innovation were reviewed. The importance of innovation in the banking sector is discussed. Previous studies on technological evolution in the banking industry are also summarized.

INNOVATION

Innovation is defined as the use of new knowledge to offer a new product or service that customers want. The new knowledge here refers to technological or market knowledge. Technological knowledge is knowledge of components, linkages between components, methods, processes and techniques that go into a product or service. Market knowledge is knowledge of distribution channels, product applications and customers' expectations, preferences, needs and wants. No matter how the paradigm shifts due to external factors like technology and environment, the process of innovation cannot be separated from a firm's strategic and competitive context.

The Utterback/Abernathy model was the first attempt at detailing the dynamic processes that take place within an industry and its firms during the evolution of a technology. The model described three phases in an innovation's life cycle – the *fluid*, *transitional* and *specific* phases. In the fluid phase technology is in a state of flux and firms have no clear idea whether, when or where to invest in R&D. Custom designs are common, with the new product technology often crude, expensive and unreliable but able to meet the requirements of some market niches. The evolution then enters the transitional phase when, as producers learn more about how to meet customer demands through producer- customer interaction and through product experimentation, some standardization of components, market needs and product design features takes place.

[9]Assistant Professor, Arise Arts & Science, Tamil Nadu, India, n.anjalai@yahoo.com

A *dominant design* emerges, signaling a substantial reduction in uncertainty, experimentation and major design changes. The design commands a high percentage of the market share. ATMs represent one such dominant design in the banking industry. In the specific phase, products built around the dominant design proliferate and there is more and more emphasis on process innovation, with product innovations being largely incremental. Cost becomes the basis for competition. The pattern described repeats itself when a new technology with the potential to render the old one obsolete is introduced. This results in a discontinuity, plunging the innovation cycle back to the fluid phase.

Technology Adoption Life Cycle is similar to the Utterback/Abernathy model in many aspects. However, it addresses another important and unanswered question in the dynamics of innovation. To what extent can a firm influence the evolution of the innovation? For example, to what extent can a firm guide its design to an industry standard, or *dominant design*? Tushman and Rosenk argue that this depends on the amount of technological uncertainty which in turn, depends on the complexity of the technology and the stage of evolution.

The more complex an innovation, the greater is the role of non-technical factors such as complementary assets and organizations in the local environment during the innovation's life cycle to come up with the Revised Technology Adoption Life Cycle. The significant value-add of Moore's model is the 'Chasm' concept.

TECHNOLOGICAL INNOVATION BANKING

The Inverse Product Life Cycle Model was applied to the banking industry by; Barras' model was reversed with respect to Utterback and Abernathy's model. While this model helps understand the innovation mechanisms of the services industry, it "lends itself to a fundamental criticism, which is manifest when it is applied to the banking industry". Barras' model characterizes all banking innovations as incremental, which is not necessarily correct. The diffusion of network technologies and distributed systems has resulted in radical innovations like ATMs and Internet banking.

This paper analyzes innovations resulting from diffusion of information technologies in banking sector. This model built on existing work done by Barras, and the Utterback/Abernathy model. A distinction was made between the 'mass automation' regime and the 'smart automation' regime. Mass automation dealt with mechanization of back office procedures in the 1960s and was a period of incremental innovation, whereas smart automation dealt with the diffusion of network technologies like ATM and was characterized by radical process innovations. The theoretical hypotheses were validated through an econometric analysis of the determinants of innovative behavior in a sample of Indian banks.

REVISED TECHNOLOGY ADOPTATION LIFECYCLE

Automated Teller Machines can be considered to be a discontinuous *revolutionary* innovation. ATMs required a bank's customers to dramatically change their behaviors in order to obtain benefits in terms of faster, more convenient banking. Instead of going to a bank branch, filling out a transaction form and interacting with a human teller, these customers could log on to the bank's network and conduct a variety of transactions on a machine. The Technology Adoption Life Cycle can be applied to ATMs in order to understand the business strategies adopted by various banks at different stages of ATM evolution.

Increasing labor costs in the 1960s placed pressure on labor intensive industries like banking to look towards automating some of their functions. The Bank was the first to envisage the potential of ATMs, and introduced the first ever ATM in 1967. Initially, ATMs were not very sophisticated, and served only as cash dispensers. Originally, large banks offering an ATM service achieved an advantage over their competitors. There was scant understanding of the customers' needs or expectations and the role of ATMs in banks' retail delivery system was vague.

In the early market stage, the ATM was a product based on a radical technological innovation, and did not represent a solution to a customer need at that point of time. Early adopting banks focused on the technological aspects of ATMs in order to gain leverage among innovators and visionaries.

In order to enable ATM technology to successfully cross the, banks began to focus on specific customer niches. By penetrating into clearly defined market segments, ATMs began to achieve acceptance in these segments. A successful bank strategy during this phase involved segmenting the customers according to attitudinal variables, and focusing on the requirements of these customers. This study found that ATM cardholders differed from non- cardholders in their attitudes towards change, convenience and technology. The findings have been backed by numerous other studies.

By the features like cash balance enquiry, deposits and funds transfer extended the original cash dispensing functionality to cater to the primary requirement of early ATM cardholders, namely, convenience. This permitted these customers to conduct the majority of their routine transactions without visiting a bank branch. By leveraging the acceptance of ATMs within specific customer segments, banks began to 'bowl over' other niches, enabling ATM machines provided by Docutel and NCR to become the *dominant design*.

ATMs began to gain widespread acceptance among banks' customers. At this stage most banks began to consider an ATM as a prerequisite for staying in business. Developments in networking technologies also helped reduce the costs of setting up and maintaining ATM networks. The economies of scale necessary for tornado market success were achieved by advances in digital technology and network consolidation among different banks.

By the ATMs were viewed as a generic service, a commodity with no competitive advantage. In order to succeed, banks needed to adopt main street strategies like product proliferation and bundling. The advent of shared national networks like Cirrus and Plus helped proliferate ATMs further. Banks looked to bundle additional functions like bill payments and automatic check cashing in order to differentiate their ATM services.

These differentiated services, however, constitute an insignificant percentage of the entire ATM transaction volume. This inability of banks to differentiate their offerings has resulted in limited success on the ATM Main Street. After reaching an apex of 930 million transactions per month in 1998, industry ATM volume slipped to 907 million transactions per month in 1999. Dove predicts the compound annual growth rate of ATM transactions over the next couple of years to be 1.3%.

Industry analysts claim that a large reason for this stagnating growth is the saturation of the market. Rising fees per transaction (instituted when Visa and MasterCard dropped their bans on charges in 1996) have deterred many consumers, further trimming transaction growth, it can be argued that stagnating ATM transaction volumes indicates that the physical limits of ATM technology are being reached. This has prompted banks to begin experimenting with other e-banking products and services, notably Internet Banking. However, "retail banking via the Internet has not taken off yet, despite perennial predictions that it is about to". Yet, banks have invested heavily in Internet banking, and the focus is on customizing the entire banking experience online.

INTERNET BANKING AND LIFECYCLE

The Internet, much like the ATM that came before it, is fundamentally a new distribution channel over which banks can deliver traditional banking products and services. Consumers have developed a high degree of comfort for using remote basic banking services, as demonstrated by the rapid proliferation of ATMs since their introduction 30 years ago. Initially, banks promoted their core capabilities, namely, products, channels and advice, through the Internet. Then, they entered the Internet commerce market as providers/distributors of their own products and services.

The vast majority of the banks that avoided Internet banking in the beginning did so because they simply did not see the benefits of using it. An extensive study conducted in 2001 by the Consumer Bankers Association indicates that Interne banking usage remained stagnant from 1996 to 1998, with less than 10% of the market utilizing the service. This characterizes the early adoption phase where the banking industry, in its striking transformation, has embarked on an era of 'anytime, anywhere' banking. Banks that had the capability of implementing such a system became the first movers and focused primarily on the technological benefits offered by such a setup in order to capture technology enthusiasts at that time. The banks are provided services such as cash management, account statements and transaction receipts.

THE NEXT PARDIGM

As Internet and Mobile Banking technology become generic services, a stage of technological discontinuity will prevail again, with a multitude of new technologies and services fighting to become the next paradigm. The most promising of these will be a strategic shift towards a "customer-centric business model". The current state of the financial industry, our modifications of More's Model.

CURRENT STATE OF THE FINANACIAL SERVICE INDUSTRY

Deregulation

Changes in government regulation of the industry have caused traditional firms to expand their offerings. Competition is multiplying as these institutions fight for customers in new arenas.

Disintermediation

Non-traditional entrants are competing with recognized financial institutions. These new players are forming stronger relationships with financial service firms' consumers than the firms themselves are able to form. For example, programs such as Quicken or Microsoft Investor are accessed more frequently than Citigroup's offering. With equivalent products available from a number of sources, consumers are not induced to frequent one product provider.

Thus, firms will lose intimacy with their customers (making it harder to cross-sell), and customers will lose loyalty to their financial service providers (increasing customer acquisition cost). Furthermore, the Internet allows consumers to analyze costs and performance themselves, capturing real-time market data with their own computers. These consumers are thus able to access information and services that were previously mediated by financial service firms.

Wealth Transfer

Over the next ten years, the largest and wealthiest demographic group will begin transferring wealth. In this way, a significant share of each firm's best customers will be leaving them. The customers who will be transferring wealth are, in general, older, brand-loyal customers who have maintained significant amount of money with particular firms for a long time.

In many cases, those receiving the money will be younger, less brand- loyal individuals who lack existing financial relationships. Therefore, they are significantly less predictable than the older customer base. The shift between this long-standing customer base and the emerging wealthy is accelerating, and a financial service firm needs to manage this shift properly for its customers.

Customer Centricity

The industry requires that organizations rethink their traditional methodologies or risk obsolescence. Financial service firms will need to shift to a customer-centric, rather than a product- centric business model. They see the profit in forming value-added relationships with their consumers and cross selling new products into those relationships. Electronic Customer Relationship Management (eCRM) will thus represent the next paradigm shift.

The customer expectations of personalization will escalate with the continued enhancement of technological capabilities and that customers will expect to be truly "known" by the firm. eCRM in this sector will not just be about implementing the right technology and software; It will be a matter of fundamental change, involving the re-engineering of processes throughout the financial institution. It must not be a web solution or an advisor solution or a call center solution or a wireless solution. Enterprise-wide eCRM must be all of the above. Beyond the ability to deploy across multiple channels, the solution must have consistency and collaboration across all channels.

The above description represents a new way of looking at the customer where current marketing abilities are rendered potentially obsolete and existing technological capabilities are enhanced. Drawing on our modification of More's Model and using it. Consequently, incumbents with established technological abilities and, to a lesser extent, new entrants may be most successful in exploiting the opportunities made available by the eCRM innovation. Banks that are able to understand their customers and re-assess their strategies accordingly will be the most successful in the banking environment of the future.

CONCLUSIONS

Changes in banks' external environment, including globalization and deregulation, have made the banking sector highly competitive. Banks find it hard to compete on price, and need to look at other ways to retain customers. As customers become more sophisticated, it becomes imperative for banks to consider the use of technology to respond to their continuously changing requirements. A number of previous studies have highlighted the importance of technology to a bank's success.

By applying the Revised Technology Life Cycle to two discontinuous e-banking innovations – ATMs and Internet Banking, we have established that the Life Cycle provides a useful outline for successful strategies that can be adopted by banks and other financial institutions as technology evolves. According to the Life Cycle, banks' marketing strategies need to change as the technology matures in the marketplace. Certain limitations of the Life Cycle have also been highlighted, and modifications are proposed. These modifications are, in turn, used as the basis of our hypotheses on the next technological discontinuity.

Our study drew from existing research material in e-banking technology and models of innovation. Future research avenues include validating this study on a set of banks in different geographical regions as a case study, in order to confirm its level of representativeness. In addition, the study could be replicated using other e-banking technologies like EFTPOS, SWIFT or smartcards.

REFERENCES

1. Kalakota, Ravi. Frontiers of Electronic Commerce, Pearson Education, Delhi.
2. Shah, Mahmood. E-Banking Management – Issues & Solution, Information Science References.
3. Allan, A. (1998). "Innovation Management", *Oxford University Press*.
4. Barto, G. L. (1999). "E-Banking 1999: New Model of Banking Emerges", *Gartner Group*.
5. Slywotzky, Adrian J. (2001). "Reving The Engines Of Online Finance", *MIT Sloan Management Review, Cambridge,* Summer.
6. Thornton, J., and White, L. (2001). "Customer Orientations and Usage of Financial Distribution Channels", *International Journal of Bank Marketing,* Volume 15, No. 3, pp. 168-185.
7. Young, Robert De. (2001). "The Internet's place in the Banking Industry", *Chicago Fed Letter, Chicago,* March.
8. *Singh, Shreyan; Sohrab Singh Chhatwal; Taha Mohammed Yahyabhoy, and Yeo Chin Heng. Dynamics Innovation in E-Banking.*

****

IMPACT OF E-GOVERNANCE ON USER SATISFACTION

L. Jency Priya[10]

ABSTRACT

We find that the presence of village Internet facilities, offering government to citizen services, is positively associated with the rate at which the Rural and Urban area obtain some of these services. Both these government services are of considerable social and economic value to the citizens. Rural and Urban area report that the Internet based services saved them time, money, and effort compared with obtaining the services directly from the government office.

We also find that these services can reduce corruption in the delivery of these services. With the emergence of information and communication technologies in government, it is possible to locate services closer to the user through different channels which help them in managing their transactions. This motivates to study user satisfaction with electronic government services.

This report presents a survey study about user satisfaction from e-government service providers. A questionnaire is distributed and analyzed to achieve a better understanding about quality of services provided. It is concluded that most user are satisfied with the services that provided by e-government. However, this satisfaction is not so related to their personal attitudes and usability factors. At the end the soft issues which may affect on the providing services with e-government are considered.

KEYWORDS

E-Government, E-Commerce, Impact, Services, Information Communication Technologies (ICT), and ROI etc.

INTRODUCTION

E-Government can be defined broadly as the use of information and communication technologies (ICTs) in the public sector to improve its operations and delivery of services. It is increasingly being seen as the answer to a plethora of problems that the governments or public agencies in general face in serving their constituencies effectively. This is especially so in developing countries, where generally the public agencies face resource constraints in improving their operations and delivering services to the citizens. In such cases, e-government has been touted as a means to save costs while at the same time improving quality, response times, and access to services. Some analysts have noted its role in improving the efficiency and effectiveness of public administration. It is also seen as a tool to increase transparency in administration, reduce corruption, and increase political participation. Its potential to make governments more competitive and to enable them to face the challenges of the information and communication age has also been noted.

PROBLEM STATEMENT

The advent of Information and Communication Technology (ICT) has changed the daily routines of businesses as well as the lives of private users. In developing countries, this transformation process has just begun. For some citizens, the use of information technology tools is a natural part of their daily lives while others prefer more traditional channels. This has provided the government with unprecedented opportunities to improve their services and increase user's satisfaction, while reducing their costs.

Eventually, the huge cost of developing and deploying ICT, demands careful planning and design. Governments need to look at their administrative processes and communication within and across agencies when applying new technology. "E-government" refers to the use of IT such as Wide Area Networks, the Internet, and mobile technology by government agencies in order to improve the relationship between users, businesses, and government. These technologies can serve a variety of different ends. It is important to understand that e-government is more than a website, electronic mail (e- mail), or processing transactions via the Internet.

Major categories of the e-government services are between government and the citizens (G2C), government and business (G2B), government and other government agencies (G2G), and between government and its own employees (G2E). While many current efforts focus on G2C, the three remaining areas can provide tremendous payback for government. Therefore, it is important to consider that a definition of e-government is not complete unless it identifies and considers all of its customers.

E-government strategies in developing countries should first target he improvement of their operations and processes and also the level of government's ability to cooperate. This new unavoidable position for the world governments is now referred to as "good governance". This research is deliberately concentrated on whereas, in Iran as a developing country culturally do not use from the electronic ways for doing their activities, E-government is a new way of doing governmental work in Tamil Nadu. Creating new systems and procedures is not enough; maintenance, ICT training and social acceptance are as equally important.

[10]Lecturer, Dr. Nalli Kuppusamy Arts College, Tamil Nadu, India, jenceypriya84@gmail.com

BACKGROUND

In the current era of technological advancement that is taking place all over the world, a new kind of rationalization has been introduced in the public sector by the use of modern information and communication technologies (ICTs). Increasingly the use of ICT tools and applications is leading to transformational shifts in public policy, processes and functions. E-government is being deployed not only to provide citizen services but for public sector efficiency purposes, improving transparency and accountability in government functions and allowing for cost savings in government administration. ICTs are changing the way the government does business for the people. In this context, e-government is seen to be a lever for the transformation of government. G2C services mostly because it is the most developed area in e- government services in Tamil Nadu.

REVIEW OF LITERATURE

Kraemer*, et al,* 1978, Danziger and Andersen, 2002 said that 'E-Government' (or Digital Government) is defined as 'The employment of the Internet and the world-wide-web for delivering government information and services to the citizens.' E-government describes the use of technologies to facilitate the operation of government and the discernment of government information and services. E-government, short for electronic government, deals heavily with Internet and non-internet applications to aid in governments.

A literature on "IT in government" goes back at least to the 1970s. This literature concerns IT use within government, while the recent e-Gov literature more often concerns external use, such as services to the citizens. Just like the term e-Commerce, the term e-Government was born out of the Internet boom. However, it is not limited to Internet use or publicly accessible systems for direct use by customers or citizens. E-Government started as a practitioner field, basically convening practitioners struggling to meet the new challenges of the Internet medium by implementing new systems creatively.

PHASES IN E-GOVERNMENT

Phase-1: Presence

The primary goal here is to post information such as agency mission, addresses, opening hours and possibly some official documents of relevance to the public.

Phase-2: Interaction

This phase is characterized by Web sites that provide basic search capabilities, host forms to download and linkages with other relevant sites as well as e-mail addresses of offices and officials. This stage enables the public to access critical information online and receive forms that may have previously required a visit to a government office.

Phase-3: Transaction

This phase is characterized by allowing constituents to conduct and complete entire tasks online. The focus of this stage is to build self-service applications for the public to access online, but also to use the Web as a complement to other delivery channels. Typical services that are migrated to this stage of development include tax filing and payment, driver's license renewal, and payment of fines, permits and licenses.

Phase-4: Transformation

It is characterized by re-defining the delivery of government services by providing a single point of contact to constituents that makes government organization totally transparent to users. This phase relies on robust customer relationship management (CRM) tools and new methods of alternative service delivery capabilities that reshape relationships between users, businesses and governments.

RETURN ON INVESTMENT

Experimental **Return on Investment** (ROI) is a function of three critical variables to measure the effectiveness of e-government:

Application and Service Relevance

This point questioned to see whatever the promise of e-government meets the needs of users and improves their life.

Citizens and Business Satisfaction

Through using this point, the ability of e-government to the internet can be measured.

Preservation of Public Trust

Privacy is a major component in all issues, so peoples who use e-government should be confident to prevent their privacy.

MERITS OF E-GOVERNMENT

- Can improve current government services, increase accountability, result in more accurate and efficient delivery of services, reduce administrative costs and Time spend on repetitive tasks for government employees, facilitate greater transparency in the administration of government, and allow greater access to services due to the around the clock availability of the internet.

- E-government also allows government, such as email, online meeting and forums for voicing opinion, online transactions, and online voting. By creating viable Internet presence, a government can generate interest in political process among young users who frequently use internet.

- Cost Reduction and Efficiency Gains.

- Quality of Service Delivery to Businesses and Customers.

- Transparency, Anticorruption and Accountability.

- Increase the Capacity of Government.

- Network and Community Creation.

- Improve the Quality of Decision Making.

- Promote Use of ICT in Other Sectors of the Society.

CRITICAL SUCCESS FACTORS

Governments worldwide are faced with the challenge of transformation and the need to modernize administrative practices and management systems. ICT is believed to be a powerful enabling tool to address some of the key barriers and challenges for entering the global economy and for future growth potential. There are some capabilities that are needed for the Successful implementation of e-government and also to overcome the barriers ahead, which are known as the critical Success factors.

Technology

Focuses on assessment of the current infrastructure, identification of improvements needed to support e-government initiatives, implementation of those improvements, and integration of existing autonomous systems and between new and legacy systems, with a focus on providing a total solution.

Human Resources

Improving ICT human resources in developing countries to keep up with those in the developed countries can narrow the disparities that create digital divides between and within countries. For these reasons both public and private sectors should investigate to develop human capital. These investigations should be done in fundamental knowledge of and skills in computer application; skills to search analyze and utilize information.

Organization

Heeks mentioned that managerial reforms are supported by Information and Communication Technology (ICT), including improved effectiveness and efficiency of personnel management, parts procurement, accounting, health care, and claiming unemployment benefits.

Private Sector Participation

Experience in other countries indicates that the private sector is a major driving force and intermediary between government and users in the implementation of the e-government. While private sector does not appear to have sufficient information on the magnitude of the e-governance program to allow the sector to fully engage and put in place structures and systems to support e-governance program.

Financial Resources

While planning and budgeting in a changing climate is difficult, the government should normally seek to invest in sustainable programmes that can produce savings. Capital investment in technology such as e-government leads to enhanced service delivery and reduced running costs. Whilst significant cost saving may be achieved though the electronic delivery of services and the redesign of core processes, substantial capital investment is often needed. According to the Bolton council a key principle of the Capital Investment Strategy is to co-ordinate the approach to investment both within the Council and with external partners.

Culture

It will require a certain cultural change for government to consciously organize itself from the citizen's point of view, rigorously questioning where value exists in the current format.

Private Investment

E-government foresight should interactively foresee investment modes for building e- government. Jacek Murawski Points that "public sector investment is a driver of private sector IT investment because it requires businesses to file returns electronically".

Planning

The Government Action Plan provides a strong framework and impetus for the implementation of e-government. It brings together the various strands and requirements of e-government in a manner that is accessible and reflects the key priorities moving forward.

Time Factor

Time is an important factor in e-government and if it estimates deficient, projects have been abandoned even after vast sums of money have been spent on their development. Even where such projects have been completed successfully, they are still very expensive undertakings.

E-GOVERNMENT STRATEGY

Major groups of the e-government services are between government and the citizens (G2C), government and business (G2B), government and other government agencies (G2G), and between government and its own employees (G2E). While many current efforts focus on G2C, the three remaining areas can provide tremendous payback for government. Therefore, it is important to consider that a definition of e-government is not complete unless it identifies and considers all of its customers.

E-government has attracted the attention of politicians, scientists, and statesmen of the world in the recent years and hence has been extensively approached by governments in many countries, many of whom have devoted considerable efforts and resources for its implementation.

According to this UN proposed a model for the e-government implementation including the following stages:

- **Emerging** : An official government online presence is established.
- **Enhanced** : Government sites increase; information becomes more dynamic.
- **Interactive** : Users can download forms, e- mail officials and interact through the web.
- **Transactional** : Users can actually pay for services and other transactions online.
- **Seamless** : Full integration of e-services across administrative boundaries.

E-government services Department in Tamil Nadu

- Agriculture Department;
- MBC; and Minorities Welfare Department;
- Commercial Taxes and Registration;
- Energy Department; Electricity Board; Tamil Nadu Energy Development Agency (TEDA);
- Environment and Forests;
- Finance Department; Treasuries and Accounts Department; Employees' Provident Fund Organization, Chennai (EPFO);
- Health Department; Higher Education Department; Tamil Virtual University;
- Productivity Portal of NPC; Home, Prohibition and Excise Department;
- Police Department; Transport Department (RTO);
- Housing and Urban Development; Micro, Small and Medium Enterprises Department; TN Small Industries Development Corporation (SIDCO); Tamil Nadu Industrial Development Corporation (TIDCO); Tamil Nadu Industrial Investment Corporation (TIIC);
- Department of Employment and Training Teachers Recruitment Board (TRB); Tamil Nadu Public Service Commission (TNPSC);
- Madras High Court; Debts Recovery Tribunals; Municipal Corporations and Municipalities; Birth / Death Certificate; Booking of Halls- Building Plan Approvals; and Burial Services;
- Property Tax; Water Charges; Revenue Department; School Education Department; Tourism and Culture; Government Museum; Tamil Nadu Tourism Corporation (TTDC);
- Railways, Air India (Indian Airlines),Transport Corporations;
- Miscellaneous: Tamil Nadu Telecom and Chennai Telephones (BSNL); Tamil Nadu Postal Circle.

METHODOLOGY

This research is mainly descriptive because in descriptive research design goes a bit further than theories and tries to describe different characteristics of a phenomenon. The descriptive research will require a theory to guide the collection of data; also Satisfaction factors of E- government services are described in Tamil Nadu unique and new environment. Sample will be selected from Kumbakonam town that use E-government services. Random sampling selected.

RESEARCH HYPOTHESIS

- Men proportion who use e-government services in the service providers are different from women,
- There is a positive correlation between higher educated and users with the Urgency of the system,
- Citizens with more income found e-government more successful,
- There is a relationship between the Success of system and the Ease of Use, Time, and Urgency of the system.

LIMITATION OF RESEARCH

- One of the main limitations of this study was that most of the respondents use these services for the first time. Therefore, they did not more valid idea about them.
- The respondents have no idea about e-government services in other countries, therefore, cannot compare this condition with better.

FINDINGS

- After testing the hypothesis it concluded that there are not some much differences between men and women proportions. As a result, E-government service providers should pay attention to both men and women group as a same and not to any of them more than other.
- It was concluded that older and higher educated users feel that system provider is more urgent. In addition, hypothesis testing showed that age has a lower influence on the feeling of users about the Urgency of the system in respect of education.
- As we explained before e- government service providers are very helpful to decrease time expended in respect to previous way of offering government services. Accepting this hypothesis may happen because time is most important for people with more income in respect to people with less income because they are busier.
- Success factor is explained by the three repressors (Urgency, Time, and Ease of Use).

CONCLUSIONS

A high quality e-government service is the determinant factor toward the success of governmental organizations. By understanding the characteristics of quality e-government services that enhance users' satisfactions, government service managers and governmental organizations can avoid investing valuable resources in offering e-service quality characteristics that may not work effectively.

The proposed scale will allow the organizations to understand which area in e-government services that should be emphasized. This proposed scale will be able to identify and set up quality characteristics of e-government services that will contribute toward increasing users' satisfactions.

REFERENCES

1. Lee, G. G., and Lin, H. F. (2005). "Customer Perceptions of e-Service Quality in Online Shopping", International Journal of Retail and Distribution Management, (2005), Vol. 33, No. 2, pp. 161-176.

2. Agranoff, R., and McGuire, M. (2001). "Big Questions in Public Network Management Research", Journal of Public Administration Research and Theory, 11(3): pp. 295-396.

3. http://en.wikipedia.org/wiki/E-Government, www.cips.org.in/public, www.indiana.edu

4. http://www.egov.vic.gov.au/Research/CustomerCentricService/customer.htm

5. http://europa.eu.int/information_society/topics/citizens/accessibility/index_en.htm

6. http://europa.eu.int/information_society/topics/citizens/accessibility/web/index_en.htm

7. http://europa.eu.int/information_society/programmes/egov_rd/index_en.htm

*****

USES OF COMPUTERS IN DIFFERENT FIELD OF WORKPLACE

K. Bakyalakshmi[11]

ABSTRACT

As we all know in this fact that computers are being in each and every field nowadays. And without computers we as human beings could not have advanced this much and keep up in this competitive world. Computers are being used in schools, colleges, hospitals, organizations etc. And it would not wrong in saying this that without the use of this technology all of these firms and institutions would not work properly.

The use of computer technology in business organizations is found on a large scale, because it just makes things much easy and faster at the same time. Unlike in the past when people did not know what is meant by a computer, today, computers are found almost everywhere, be it in offices, schools, libraries or homes. The subject is now being taught in schools in order to make the students understand the basics of computers.

KEYWORDS

Computer, Banking, Finance, Transportation, Education, and Health etc.

INTRODUCTION

Computers play a very important role in human lives. The primary purpose of using a computer is to make life easier. To appreciate the importance of computers in today's world, let us consider a simple instance i.e. the accounting system of a company. If we follow the conventional system, preparing a balance sheet would require about a month: whereas with a computer, this could be a matter of just a few hours.

A balance sheet, prepared manually, is highly prone to errors and the scope for making corrections is very limited. However, if a computer is used in preparing a balance sheet, the likelihood of committing errors is very remote and corrections can be carried out even at the last moment. All the tasks performed by a computer may also be performed by human being but at the expense of a lot of time and labor.

OBJECTIVES OF STUDY

- To understand the area of computer application,
- To analyze the use of computers in various field,
- To offer suggestions for improvement in their usage.

AREA OF COMPUTER APPLICATION

Computers are used in day-to-day life to simplify the procedures and practices in the work. Some of the important applications of computers are: Business applications, Payroll preparation, Education, Entertainment, Inventory Control, Music, Engineering, Order Processing, Transport and Communication, Banking and Accounts, Defense, Insurance, Hospitals, Libraries and Museums, Scientific Research, Industrial Application, Meteorology, Space Technology, Communication, Public Utilities, Telephone, Medicine & Law and Order.

COMPUTERS IN BUSINESS

The business must understand and adapt in the new source of competitive advantage connecting to the people of the core competencies and customer interaction on global scale, globe market place. In the globe business world, globe interaction is very important. In every organization there are major business processes that provide the critical tasks such that customer bills, analyzing sales of various products in different locations etc. in business, computers are used in areas such as: Marketing, London Stock Exchange, Stock Exchange, Banks, Departmental Store, Office Automation, Document Management System (DMS), Message-handling system, and Office Support System Enables.

ERGONOMICS

Business learned that office could not be automated in the same way the factory was automated, and the field of ergonomic began to emerge. Office tasks involve a great deal of thinking and decision-making. As a result office systems must be flexible and versatile. Moreover, they must be designed so any knowledge worker, regardless of background can easily use them. This is called ergonomics, the study of how to create safety, comfort and ease of use for people who use machines. It is not a new field of study; in fact it has existed for over 100 years.

[11]Student, Idhaya College for Women, Tamil Nadu, India, bala_com13@yahoo.com, bakya@yahoo.com

OFFICE AUTOMATION TECHNOLOGIES

There are five primary technologies used in managing information in office automation:

- Text or written words,
- Data, as in numbers or other non-text forms,
- Graphics, including drawings, charts and photographs,
- Audio, as in telephone, voice mail, or voice recognition systems,
- Video, such as captured images, videotapes or teleconferencing.

In the past these forms of information was created using different technologies. Text was created using conventional typewriters or more recently, word processing. Data, such as sales reports, was provided by the central computer. Charts and graphs were either hand-drawn or created using 35mm slide photography and videotapes were used for training. Audio was limited to the phone or tape recording. It was not possible to combine these various forms of information.

What made it possible to combine them was the computer. What computer produces is called an electronic document, which is a self-contained work, conveying information that has been created by a knowledge worker and stored in a computer system. An electronic document may be a simple memo that may be printed on paper or transmitted via electronic mail. Or it may be a more complex document, with graphics or even video. Most computer systems can incorporate sound, so that an on-screen document can be annotated with comments spoken by the document creator.

OFFICE AUTOMATION SYSTEMS

Office automation uses computer-based systems to provide information to help knowledge workers make decisions that benefit the business. Office automation systems are comprised of many distinct subsystems: text management systems, business analysis systems, document management systems and Network and communications systems.

TEXT MANAGEMENT SYSTEMS

A text management system is a computer system designed to work with the written or typewritten word. It includes all kinds of typewriters, word processing systems, PCs with word processing, desktop publishing and text editing systems, and even computerized typesetting equipment. Text management systems are used for tasks like writing memos, notes, letters and other short documents, printing envelopes and labels, preparing pre-printed forms such as invoices, composing complex documents such as proposals & reports, retrieving and editing documents such as contracts, creating display documents like newsletters, etc.

BUSINESS ANALYSIS SYSTEMS

Managers need solid data from which to extract the information necessary to make good decisions for the business. In the past, these knowledge workers had to rely on their experience and other personal factors to make decisions. A business analysis system provides data that, when used with the proper software, helps its users better understand the business environment and make more effective decisions. Corporate users routinely use spreadsheets for analyzing cost and benefits and for creating budgets. Other software tools for performing analysis that are commonly used in large companies are decision support systems (DSS), expert systems and executive support systems (ESS).

A decision support system helps the knowledge worker to extract information from the various MIS database and reporting systems, analyze it, and then formulate a decision or a strategy for business planning. An expert system is a computer system that can store and retrieve data with special problem solving expertise. An executive support system is an information system that consolidates and summarizes ongoing transactions within the organization. It provides the management with all the information it requires at all times from internal as well as external sources.

DOCUMENT MANAGEMENT SYSTEMS

Document management systems aid in filing, tracking and managing documents, whether they are paper, computer based, micrographics, or purely electronic. Office automation demands that data be immediately accessible and instantaneously retrievable. For that reason, we are slowly moving away from paper and toward document forms that can be stored on computer.

NETWORK AND COMMUNICATION MANAGEMENT SYSTEMS

Today, knowledge workers have many ways to communicate with one another, primarily by voice, fax, and e-mail. They can communicate in real-time, via phone or computer. They can also communicate using computer controlled PBX telephone systems to record a digital message and leave it in the recipient's electronic mailbox. These systems are called network and communication management systems. The network and communication management systems include telephone, electronic mail, voice messaging systems, and teleconferencing & fax machines.

AIRLINE SYSTEM

In airline system, computers are used to control passenger aircrafts and vehicles. Early aircraft were controlled by moving parts attached to the controls using cables. In modern, fly-by-wire system, electronic signals from the cockpit are sent to that adjusts the flight surfaces. Computer is embedded in the pilot's or driver's controls. It is linked up among different cities and gives full information about its flight and seat reservation.

COMPUTERS IN HOSPITALS

Moreover, with the development of medical science, computers have become an integral part of hospitals and they have made the task of keeping records of staff, recording the incoming as well as outgoing time of staff, billing, as well as maintaining records of patients taking admission to the hospital and also their medical history very easy and less time consuming. The names as well as contact details of attending doctors are also stored in hospital computers so that they can be contacted immediately in case of an emergency by the hospital personnel. In other words, with the passage of time, medical grade computers have gained significant momentum.

To learn more about the use of this health care computer, just read on. What is more interesting about medical computers is that they help doctors in performing different types of surgical operations. One of the most important examples in this area is laparoscopic surgery. Moreover, there are several clinical imaging processes like CT scan, X-ray and so on which are performed as well as examined with the help of medical computers. Also, the pulse rate, heartbeat as well as brain readings of critical patients are recorded and monitored with the help of medical grade computer. What else? Hospital computers can also easily monitor the movements of internal organs of the patients which is practically impossible for the human eye. These are some of the basic uses of computers in the medical field and what can be said is that their use in the field of medical science is increasing day by day.

E-COMMERCE

E-commerce (electronic commerce) describes the buying, selling, and exchanging of products, services, and information via computer network. The term e-commerce as describe transactions, conducted between business partners. There are many application of e-commerce, such as home banking, shopping in electronic malls, buying stocks, finding a job, conducting an auction, collaborating electronically with business partners around the globe, marketing & advertising and providing customer service.

- Electronic Mail (E-mail),
- Video Conferencing,
- Electronic Shopping (E-Shopping),
- Electronic Banking.

BUSINESS APPLICATION AT HOME

Not everyone is convinced that computers are useful or practical at home. But those people who use home computers generally find that they can put the same applications to work at home as they do in their offices:

- Word processors and Spreadsheets,
- Database programs,
- Personal information management programs,
- Accounting and income tax programs.

HOME ENTERTAINMENT REDEFINED

Most computer game is simulations. Computer games can simulate board games, sporting events, intergalactic battles, street fights, corporate takeovers, or something else, real or imaginary. Many require strategy and puzzle solving; others depend only on eye-hand coordination. Many of the most popular games require some aspects of each. With dazzling graphics, digitized sound, and sophisticated effects, many of today's computer games represent state-of-the-art software. But in a few years these computer games are likely to look as primitive in a decade as those early pong games look today.

COMMUNICATION, EDUCATION AND INFORMATION

Millions of people use home computers for education and information. Many of the educational software programs are used by children and adults in homes. Edutainment (Education and entertainment) programs specifically geared toward home markets combine education with entertainment so they can compete with television and electronic games. Encyclopedias, dictionaries, atlases, almanacs, telephone directories, medical reference, and other specialized reference now come in low-cost CD-ROM versions-often with multimedia capability. More up-to-the-minute information is available from the Internet and other on-line. Of course, Internet connections also provide electronic mail, discussion groups, and other communication options for home users.

COMPUTER –CONTROLLED MEDIA

A typical child spends hours each day watching screens-television, video game, and computer-and listening to radio and recorded music. Traditional lectures cannot live up to the expectations created by this entire high-tech media input. A growing number of teachers are using computer graphics, videodiscs, CD-ROMS, and other digital media to convey information in a more dynamic form. Depending on the way these media are used, the student's role might be to observe the presentation, to control the presentation, or to create the presentation.

HYPERMEDIA AND INTERACTIVE MULTIMEDIA

From the student's point of view, teacher-controlled media presentations are still passive, linear affairs. To get students more involved in the learning process, many teachers use hypermedia and interactive multimedia software that put students in control. Sometimes these interactive lessons are created by teachers; more often they're purchased from software development companies. Some are simple tutorials with sound and/or video; others are multimedia reference tools with hypertext cross-references that allow students to jump quickly from topic to topic or change the way the information is displayed.

COMPUTERS IN ENTERTAINMENT

Computers have now become an integral part of the entertainment industry. They are used for creating dazzling special effects in movies. They are used in editing movies. They are used to create full-length movies with cartoon characters. They are also used in multimedia presentations. They help in composing, editing, recoding and reproducing music and sound effects. Computers are used in sports to analyze the movements of sportspersons and to find faults in the movements and optimize the movements so that maximum efficiency is achieved. Computers are used by sports professionals to analyze their techniques to find their strengths and weaknesses.

COMPUTERS IN MOVIES

Anybody who has seen science fiction movies like 'Star Wars', 'E.T.' or 'Matrix' or the special effects in movies like Titanic' or Terminator' or cartoon movies like 'A Bugs Life', 'Toy Story' or 'Antz' will know the importance of computers in the film industry. With the aid of sophisticated graphics and animation packages the special effects technicians can create the illusion of a locomotive flying through the air or a robot transforming into a human being and so on. At the theater, technicians use coordinated computer-controlled lighting cues to brighten or dim the stage. The performing artists might even use computers to control the images and sounds of the performance itself.

COMPUTERS IN MUSIC

The use of technology in the world of music today is an inescapable fact. Any musical composition that we hear goes through a technological process at some point. This can be when the piece of music is created, when it is played or when it is reproduced. Thanks to the use of technology, musical information and communication have increased in scope over the past few decades to a remarkable extent.

COMPUTERS IN ADVERTISING

Advertising has been one of the key factors of growth and success in business. Smart businessmen always knew how important marketing was. All possible types of promoting different products had been used, but before the late 1980s computers were something difficult for business people to use and understand. It was at this time that computers started to play a considerable role in marketing, and became a powerful tool in advertising and started to bring a lot of money to people who knew how to use them in real business.

COMPUTERS IN ART

A computer and an artist have a unique relationship, though the nature of the relationship has not yet been fully realized. Some artists embrace technology not only as a new tool but also as a new fine arts medium, capable of transforming art from visual experience to full emotional interaction with the work. Ironically, critics of computer art oppose the computer for the same reasons, claiming that the computer artist gets immersed in technology instead of the creative process. Technology itself is not the culprit instead the responsibility with the people who utilize those systems.

COMPUTERS IN MEDICINE

The computers are commonly used in some area of medical fields such as laboratories, researches, scanning, monitoring, pharmacy etc., which are helping the doctor to diagnose illness:

1. Patient Monitoring,
2. Patients Records,
3. Diagnosis.

COMPUTERS IN SCIENCE

Scientists use computers to develop theories, to collect and test data, and to exchange information electronically with colleagues around the world. Researchers can access databases in distant locations-all without going any farther than the closest computer. It is also possible to simulate complex events with computers. Scientists can use powerful computers to generate detailed studies of how earthquakes affect buildings or how pollution affects weather patterns. Sophisticated software allows intricate molecules to be designed, diagrammed, and manipulated with a computer.

WEATHER FORECASTING

Computer based weather forecasting depends on accurate collection of data from weather stations, airports, satellites, different sensitive devices all around the world. Computer depends on building a model of hot, cold air, dry and humid air interaction, and how these interactions are effected by land and sea temperature, season and so on. Once this is done, the data is collected on atmospheric phenomena over a region. SPARCO weather forecasting department offer analysis of live weather data, and provides help to make business decisions based on weather forecasting.

COMPUTERS IN ENGINEERING

In the global economy, it is absolutely necessary for an organization to keep costs as low as possible to remain competitive. Since design, production, and manufacturing consume so much of a manufacturing company's budget, great savings are being made by automating these procedures as much as possible.

ELECTRONIC DATA INTERCHANGE (EDI)

EDI is the computer-to-computer exchange of business documents in a standard format. These formats look much like standard forms though highly structured. One widely used format is for purchase orders which consist of an outer digital 'envelope' with the addresses of both the sender and receiver. Inside the digital envelope, a series of structured code define the part number, cost, tax information, shipment methods, bill-to location, ship-to location, and contacts to call.

COMPUTER AIDED DESIGN/COMPUTER AIDED MANUFACTURING (CAD/CAM)

An increasingly popular tool for product design is Computer-aided-Design (CAD). CAD systems are computer programs or integrated packages for workstation hardware and software that allow the user to draw and easily modify product designs on a computer screen. Advanced CAD systems provide designers with at least 3 major benefits.

- Graphics capabilities,
- Design, storage and retrieval,
- Automatic evaluation of specifications.

SUGGESTIONS

- Difficult to maintain business secrecy and new technology must be introduced to avoid that problem,
- Fraudulent activities are involved in E commerce, it should not be encouraged,
- Some ethics must be implemented in the usage of computers,
- Computers to be used for constructive purposes and not for destructive purposes.

CONCLUSIONS

The computer will make it easier or harder for human beings to know who they really are, to identify their real problems, to respond more fully to beauty, to place adequate value on life, and to make their world safer than it now is. Computer technologies have become a central feature of the 21st century and will become an even more fundamental and critical part of how we live. Our relationship with technology is changing and these changes raise fundamental questions about what we anticipate of computer systems in the future.

REFERENCES

1. Information Technology by V. K. Kapoor.
2. Computer Application in Business by S.V.Srinivasa Vallabhan.
3. Introduction to Information Technology by Srinivasan.
4. Computer Application in Business by Amudhan – Sadagopan.
5. Introduction to Information Technology by Alexis Leon and Mathews Leon.

*****

TECHNOLOGY IN BANKING: POTENTIAL AND PREVENTABLE HAZARDS

G. Seenuvasan[12]

ABSTRACT

Due to privatization and globalization many banks were started by private and MNC's in India and all over the world. With the development of internet penetration in the country there is lower costs, and the mobile users are increasing day-by-day, it is almost certain that banking will no more be an activity confined to just brick-and-mortar branches. Online banking helps customers in saving their time as well they face some hazards. Some mechanization can be adopted to overcome the hazards.

KEYWORDS

Internet Penetration, Online Banking, and Technology Hazards etc.

INTRODUCTION

Despite the emphasis on green energy, many developed institutions have not shown any interest on the green energies. This is because they are economically strong to meet their expense on electrical power. They forget that implementation of green energy is not only beneficial for their own but also has a positive effect on the nature since green energy is clean energy. The pettiest thing is that the educational institutions that teach about green energies have also not showed any interest in the clean energy technologies.

It is referred as clean energy because it has no carbon emission. There many types in clean energy technology like wind energy, tidal energy, solar energy…etc. Here we take solar energy technology and its priority over others will be discussed.

This paper deals with benefits in adopting clean energy (solar energy) to higher institutions. Here an institution is taken as a reference and will be discussed on the benefits it will attain with the data's collected.

Banking sector takes pride today that it has gone fully tech-savvy. True - Mechanization, Branch Automation and Infusion of technology that started after 1984 and 1989 slowly, as a consequence to the First and Second Rangarajan Committees' recommendations, has grown up steadily to a very big size. Probably, the next decade will even witness a scenario in which majority of the bank customers will be using some or other electronic and communication channel to fulfill their banking needs.

With the internet penetration in the country picking up very sizably, thanks to lower costs, and the mobile users increasing day-by-day, it is almost certain that banking will no more be an activity confined to just brick-and-mortar branches. At this juncture there are some additional worries and responsibilities to banks to ensure that these new channels of banking are safe and secure for its customers.

SKIMMING

Ensuring a safe, sound and secure banking atmosphere has always been a top priority task to banks. The present and last decade has witnessed banks and customers being taken for a ride through fraudulent card transactions. The most popular mechanism through which these card frauds have been perpetrated is called "SKIMMING'.

CARD SKIMMING

It is a big hazard. This hazard has resulted in huge losses to the card holders. This terminology "Card Skimming" means copying the data hidden on the magnetic stripe of a credit card or an ATM card on to a device.

SKIMMER

The device - a mini hand-held card reader used for copying such sensitive card information is called a "Skimmer". Sometimes, a skimmer bug which is implanted in an ATM also copies the sensitive information. The information which is thus copied is then sent to a different location where it is decoded and copied on to fraudulent cards. Using these fraudulent cards, the original genuine card holder's money is siphoned off from a foreign location.

SKIMMING RISK

ATM cards form the basis for operating Automated Teller Machines. Presently, some banks are even issuing these cards as ATM cum International Debit Cards. Also, banks are relentlessly vying with each other in opening up On-site and Off-site ATMs on their own, besides forging new arrangements between them for reciprocative sharing of their respective ATM networks.

[12] Assistant Professor, Karapaga Vinayaga College of Engineering & Technology, Tamil Nadu, India, seenugopu_1971@yahoo.com

This network sharing enables customers of all member banks to use their ATM cards widely, sometimes for a nominal or no cost. Therefore, it is no wonder that frauds on account of "SKIMMING" are also increasing.

AREAS OF SKIMMING

The common places where skimming takes place are:

- Automated Teller Machines:

  Such ATMs which are positioned in not so frequently visited places by public help the fraudsters to implant a fake card reader over the genuine ATM card reader. At the end of the day, the fake card reader is removed and the stolen sensitive card information is retrieved for fraudulent use.

  - ✓ Sometimes, the ATM cabinet itself is replaced with a false one. This is normally done a day before week-end when there will be huge cash drawls.

- Point-of-Sale or Merchant locations:

  - ✓ At restaurants where the attendant holds a small fake card reader in his pocket.
  - ✓ At retail outlets where the card is swiped through a genuine as well as hidden skimmer by waiter.

- Points of data capture and transmission.

- Data Storage Point.

PREVENTING MEASURES OF SKIMMING

Some of the ways of preventing skimming are as follows:

- ➢ Educating the customers through distribution of literature, booklets, video presentations, etc., is one way of creating awareness which will help fight skimming.

- ➢ Conducting random checks at ATMs to find out if there are any unusual devices attached, keeping a check on all suspicious ATM account activities, manning ATMs with security personnel, allowing only one customer to use ATM at a time are some ways of preventing skimming attacks.

- ➢ Bar code scanners integrated with battery operated computers can be used as portable terminals and taken to customers directly. Thus, the customer will not part with his card and this will definitely reduce opportunities for skimming.

- ➢ Use of tamper resistant terminals is also one way of avoiding skimming attacks.

PHISHING

With Internet banking taking strong roots in the banking industry, one major hazard that has to be countered is "PHISHING". "Phishing" involves sending out fake e-mails, as though they are appearing from banks or reputed organizations. These e-mails try to elicit from the recipients very important and secret information such as their names, passwords, accounts IDs and credit card details.

These e-mails or instant messages give an impression to the recipients that they emanate from trustworthy persons of very high integrity who can be believed. Once the vital financial information is parted with, the same is used for defrauding the vulnerable customers.

RESULTS

The following TABLES give an idea as to how big the "Phishing" menace proved to be during 2005-2006:

Table-1: Phishing Reports Received (March 2005-March 2006)

Year	Month	Number of Cases Reported
2005	March	12883
2005	April	11411
2005	May	14987
2005	June	15050
2005	July	14135
2005	August	13776

2005	September	13562
2005	October	15820
2005	November	16882
2005	December	15244
2006	January	17877
2006	February	11163
2006	March	18480

Source: Reports of Anti-Phishing Working Group.

Table-2: Password Stealing (April 2005 - March 2006)

Year	Month	Number of Cases Reported
2005	April	260
2005	May	495
2005	June	526
2005	July	918
2005	August	958
2005	September	965
2005	October	863
2005	November	1044
2005	December	1912
2006	January	1100
2006	February	1678
2006	March	2157

Source: Reports of Anti-Phishing Working Group.

The data in respect of Phishing and Password stealing for the subsequent years have also shown an alarming increasing trend.

PHISHING MENACE

The following are some of the ways in which Phishing menace can be taken care of:

- By educating net users and specifically bank customers with net banking facility, on the modes of phishing attacks as well as details of last attacks, techniques and tools used by the phishes.
- By developing innovative tools and software applications to prevent or at least minimize the damage due to phishing attacks.
- By formulating laws to protect net users from phishing scams and to punish the phishes severely once their identity could be traced and established.

DISCUSSIONS

Technology is a wonder. It is a boon to man-kind. Banking sector has been a great beneficiary of to-day's electronic and communication technological advancements. The true benefits of such advanced technology used in banks can be realized in full only when they exhibit sufficient amount of alertness to these skimming and phishing hazards.

Banks must cultivate good banking practices amongst their personnel and parallel impart quality education to their customers, which alone can help both to identify the possible pitfalls while using technology. Only these steps will go a long way in building up a healthy, vibrant, profitable, responsible and responsive banking industry.

REFERENCES

1. E-Business, January 2007, ICFAI University Press, Hyderabad.
2. Professional Banker, April 2007, ICFAI University Press, Hyderabad.
3. Website of RBI.
4. Website of IDRBT, Hyderabad.

*****

MOBILE BANKING: AN CONCEPTUAL STUDY

K. Baranidharan[13]

ABSTRACT

Financial transactions that are based on wireless handsets may soon prove to be as pervasive as Internet-based financial applications. Recent surveys indicate that as many as seven percent of mobile phone customers use their handsets for mobile banking. While mobile banking technology is still in a developmental stage, that is most certainly true for the legal and regulatory framework that governs these services. Mobile Banking, Mobile Payments / Fund Transfers and Mobile Commerce.

The common element is that a handheld wireless device is used by the customer to initiate a financial transaction. In this article, we examine some of the many legal and technical challenges that will need to be met before banking Institutions can safely deploy mobile transactions on a wide scale to their interested customers.

KEYWORDS

Mobile Banking, Services, Micro Finance, Challenges. Device, Transactions, and Banking etc.

"We must be the change we wish to see."

– Mahatma Ghandi

INTRODUCTION

Mobile banking is one of the most significant technological innovations of the 21st century. It allows customers of a particular bank to do their daily banking on the go, which is important in this busy world. The banking sector has undergone a massive restructuring during recent years as a result of developments.

New technologies have added to the competition. The IT revolution has made it possible to provide ease and flexibility in operations to customers thus making banking simpler and easier. Rapid strides in information technology have, in fact redefined that role and structure of banking in India. Further due to exposure to global trends after the information's explosion led by internet, customers both individuals and corporate are now demanding better services with more products from their banks.

The financial market has turned into a buyer's market. Banks are also coping and adapting with time and are trying to become one-stop financial supermarkets. Banking industry in India underwent radial changes. The banking sector reforms in India enabled the banking personnel to update their knowledge. In the modern computer world, all the activities of the banking transactions are made through electronic/computers especially after the introduction of new economic policy.

Traditionally, payment systems in India have been individual scattered clusters with a substantial quantum of payments being routed through the non-bank based sectors too. With increasing concern over the existing state of payment and settlement systems in India, the RBI has taken up the cause for the establishment of an integrated payment and settlement system to benefit all the sectors of the economy apart from the common man at large.

Mobile Banking

Mobile banking as a financial tool has been seeing its time of acceptance occur very much thanks to increasing mobility offered by smart phones. Phones essentially pack the capability of a basic computer and Internet access into a communication device. The technological push for increased mobility and function via a phone has begun to take shape with increased capital investment into networks and systems that can support these features.

Furthermore, young generations expect an increasing amount of automation to occur and meet their expectations of how the world should work. Whether it's faster Internet access or increased capabilities of Web 2.0 social features on a phone, young adults are putting their consumer dollars into those business models that respond.

The banking industry has enjoyed tremendous success in the application of high-end information systems and technologies. Technological advances have reshaped the size and nature of the financial industry, allowing it to extend beyond the traditional, brick-and-mortar concept of borrowing and saving. Internet banking, digital wireless banking and mobile banking are an extension of the technological progression that is now characteristic of the banking sector. Mobile banking involves the access to, and provision of, banking and finance services through mobile devices.

[13]Assistant Professor, Sairam Institutes of Managements (SIMS), Tamil Nadu, India, idhayaco@gmail.com

Market Changes

Banks, keen on increasing their portfolios and customer base, are redesigning how they market their services. The capability of mobile banking to offer to customers is seen as a niche advantage that can be offered by the more technologically capable market players. By attracting new customers with these features for daily banking, the banking industry then has new consumers it can market other products to that make more profits, such as loans and investing services.

GROWTH OF MOBILE BANKING

Mobile banking customers now enjoy a more user-friendly service compared with the service's beginnings in the early 2000s. The decade has been a time of trial and error, as financial institutions struggle to meet consumer preferences for mobile banking features.

Early 2000s

Banks faced mobile banking challenges in the early part of the decade. Consumers found it difficult to view their financial information on the small cell phone screens that were common at the time.

Mid-2000s

As the size and capabilities of mobile devices increased, so did the effectiveness of mobile banking. Banks introduced services that accommodated more types of cell phones and mobile devices, including smart phones. Consumers preferred the easier navigation and improved images and graphics offered by updated, technologically advanced mobile services.

2008 and Beyond

In 2008, smaller banks began to offer mobile banking. More customers of large banks were also using the service. As of February 2009, over 1.9 million customers were using mobile service. Other industry players also entered the market; mobile banking application that allows customers from different banks, with different types of mobile devices, to more easily conducts transactions.

Concept of Mobile Banking

With the ease of mobile smart phones and their wide variety of applications today, it's not surprising the mobile banking is now coming into full vogue. However, the concept and ability is not a new concept. In fact, in some third world countries mobile banking has already begun widespread acceptance.

Mobile banking is an electronic system that provides most of the basic services available in daily, traditional banking, but does so using a mobile communication device, usually a smart phone. In some cases, a well developed mobile banking system can actually provide point-of-sale ability similar to an ATM or credit card, except the purchaser buys by using their phone instead.

Mobile Banking Benefits

Mobile banking provides benefits for banking institutions and customers. It reduces the operating costs of a bank by eliminating the need for call centers to provide customer service. Also, it reduces payroll costs because fewer human workers are needed. Mobile banking is cost-effective to a bank, and advanced technology enables banks to efficiently monitor banking services. Fraudulent activity is also reduced because customers can receive instant updates of various transactions through their mobile phones.

Unsecure Information

There are some risks involved in mobile banking. Accessing financial services through mobile banking entails submitting personal information through a text messaging platform. Hackers can try to access those messages through unsecure Wi-Fi hot spots. Other risks involve the bank not investing in enough encryption security of its technology. This would leave the customer's personal information open for interception.

Regulatory Issues

Banking institutions employ telecom agents to manage their mobile banking services. The use of independent or franchised telecom agents makes it difficult for a country's central bank to regulate banking operations to have a universal set of standards.

This means that different banks can establish different mobile banking rules, use substandard banking security software and charge high fees for mobile banking. These issues can cause customer confusion.

Viruses

Banking institutions make sure that their channels are protected by a secure layer to ensure the safety of their customers' information. However, some mobile phones are very vulnerable to viruses such as Trojans. These viruses provide hackers the opportunity to access your banking information through your mobile phone.

Security

Some banks offer more security for financial services through their branches vs. their mobile banking platforms. Some banks do not offer mobile banking services due to implementation costs or simply the risks associated with investing in the platform. Other risks include loss of a customer's mobile device.

Customers who lose or have their mobile phone stole risk losing their financial information. This opens up the customer to the possibility of fraud.

DISADVANTAGES OF MOBILE BANKING

Many consumers use mobile banking on their cell phones or other portable device because it allows them to quickly access information such as account balance and transaction history.

The benefits of this convenience are undeniable, but there are a number of disadvantages that mobile banking users should be aware of. The technology's cost, compatibility issues and security problems may cause you to think twice about using it.

Security

Security experts generally agree that mobile banking is safer than computer banking because very few viruses and Trojans exist for phones. That does not mean mobile banking is immune to security threats, however. Mobile users are especially susceptible to a phishing-like scam called "smashing." It happens when a mobile banking user receives a fake text message asking for bank account details from a hacker posing as a financial institution.

Many people have fallen for this trick and had money stolen through this scam. Online banking is usually done through an encrypted connection so that hackers cannot read transmitted data, but consider the consequences if your mobile device is stolen. While all banking applications require you to enter a password or PIN, many people configure their mobile devices to save passwords, or use insecure passwords and PINs that are easy to guess.

Compatibility

Mobile banking is not available on every device. Some banks do not provide mobile banking at all. Others require you to use a custom mobile banking application only available on the most popular smart phones, such as the Apple iPhone and RIM Blackberry.

Third-party mobile banking software is not always supported. If you do not own a smart phone, the types of mobile banking you can do are usually limited. Checking bank account balances via text message is not a problem, but more advanced features such as account transfers are generally not available to users of "dumb phones."

Cost

The cost of mobile banking might not appear significant if you already have a compatible device, but you still need to pay data and text messaging fees. Some financial institutions charge an extra fee for mobile banking service, and you may need to pay a fee for software. These extra charges quickly add up, especially if you access mobile banking often.

MOBILE BANKING SERVICES

Mobile banking services are usually limited to electronic movement of funds and data retrieval. This can include balance checking, transaction history retrieval, transfer of funds between linked accounts and purchasing through compatible vendor systems. In some cases, investment services can be activated, such as stock trading. Loans and other complex bank services are not included.

RISKS ASSOCIATED WITH MOBILE BANKING

Mobile banking is the technology that enables customers to access banking and financial services through the use of their mobile phones. Since the use of mobile phones has greatly increased over the past few years, banks and financial institutions have set up mobile banking systems to allow customers to withdraw, transfer and deposit money to make banking more convenient and easier to access. Although mobile banking may offer benefits, there are also risks involved.

Security Issues

One of the major hurdles to overcome for successful consumer acceptance of mobile banking is financial systems security. The idea of managing funds over a cell phone or similar, with a signal that can easily be grabbed by others with the right equipment, is a scary idea for many consumers.

Specific features are being designed or tested to enhance privacy and security. These include using identification smart cards so only the valid phone can access account information, enhance software security so the mobile user's phone doesn't get hacked and ID/Password requirements are being integrated regularly. Further, mobile banking systems are being bolstered with encryption protocols to make sure that anything caught in transit is useless without the right code to translate the data.

Services

The banking service available through mobile banking varies from bank to bank. Services that are usually available include the ability to pay bills, check account balances and receive transaction alerts. For paying bills, merchant accounts and service utilities are first registered before payment transactions are made. The account access feature is helpful in checking account balances for recently posted deposits, payments or fund transfers. To help ensure security, transaction alerts are also available for monitoring fraudulent transactions.

Technology Improvements

Developers of applications, or "apps" as they are known, have improved the technology for mobile banking and have made it easier for consumers to have their daily banking needs meet.

Competition

Mobile banking has led to increased competition for deposits, because banks with the best mobile banking features tend to gain more deposits than those that are less versatile.

Stock Trading

Mobile banking has led to an increase in stock trading, as investors do not have to be at a computer or call a broker to trade stocks.

Account information

Mini-statements and checking of account history, Alerts on account activity or passing of set thresholds, Monitoring of term deposits, Access to loan statements, Access to card statements, Mutual funds / equity statements, Insurance policy management, Pension plan management, Status on cheque, stop payment on cheque, Ordering cheque books, Balance checking in the account, Recent transactions, Due date of payment (functionality for stop, change and deleting of payments), PIN provision, Change of PIN and reminder over the Internet, Blocking of (lost, stolen) cards

Payments, deposits, withdrawals, and transfers

Cash-in, cash-out transactions on an ATM, Domestic and international fund transfers, Micro-payment handling, Mobile recharging, Commercial payment processing, Bill payment processing, Peer to Peer payments, Withdrawal at banking agent, and deposit at banking agent.

A specific sequence of SMS messages will enable the system to verify if the client has sufficient funds in his or her wallet and authorize a deposit or withdrawal transaction at the agent. When depositing money, the merchant receives cash and the system credits the client's bank account or mobile wallet. In the same way the client can also withdraw money at the merchant: through exchanging sms to provide authorization, the merchant hands the client cash and debits the merchant's account.

MOBILE BANKING MICRO FINANCE

Can you imagine having to carry all your money around with you, or having to hide it under your pillow each night to keep it safe, or being unable to transfer funds to your loved ones back home when the nearest money transfer facility is closed or 50 kilometers away? Without access to financial services, this is how billions of poor people live; their lives are marked by financial weakness and instability, which prevents them from planning ahead and taking risks to grow and move above the poverty line.

The economic crisis makes matters worse. Microfinance clients aren't free from these troubles. As a result of their remote locations, they often live hundreds of kilometers from the nearest branch of microfinance banks, and since not all microfinance providers are banks, they cannot accept deposits. Is it possible to offer financial services anywhere, anytime? Thankfully, yes.

Mobile Banking Extends the Mission of Microfinance

A recent revolution, mobile banking is the provision of banking services through mobile phones using the SMS facility or a downloadable mobile money application. This collaboration between the financial and telecom sector is an ideal solution for microfinance because 'there are about 1 billion people across Asia, Africa and Latin America who do not have a bank account but do have a cell phone' (CNN). These markets have other features that make them suitable for mobile banking as well.

The following basic microfinance services are offered to meet every day needs of micro entrepreneurs and other clients:

Cash deposits and withdrawal, through microfinance bank branches and other agents (read best practices for supply chain management in mobile banking) Micro loans provision and collection through mobile phones (clients are starting to give their feedback through surveys as well)

Payment services for utility or other bills through mobile phones Money transfers between accounts, specifically remittances through mobile technology Convenience, savings on transport costs, and security are the biggest advantages marketed to consumers by mobile banking (read marketing best practices in mobile banking), while MFIs get the benefit of reduced transaction costs and improved rural market penetration rates, which are difficult to access as it is.

MOBILE BANKING CHALLENGES AND RISKS

Like every new technological solution, mobile banking services face a few problems and risks too. Some common impediments identified by CGAP and Microfinance Focus are:

Difficulty in Maintaining Cash Float

Mobile money franchise operators (agents) often find it difficult to maintain enough cash to serve customers in rural areas who withdraw money after receiving electronic funds. This can be solved through adopting best practices in supply chain management in mobile banking.

Consumer-Related Issues

Fraudulent activities as well as hidden charges are emerging concerns for mobile banking and you can read an informative article by CGAP about this. On the other hand, because of the simplified process of registering for mobile banking services, it is often difficult to establish the authenticity of customers.

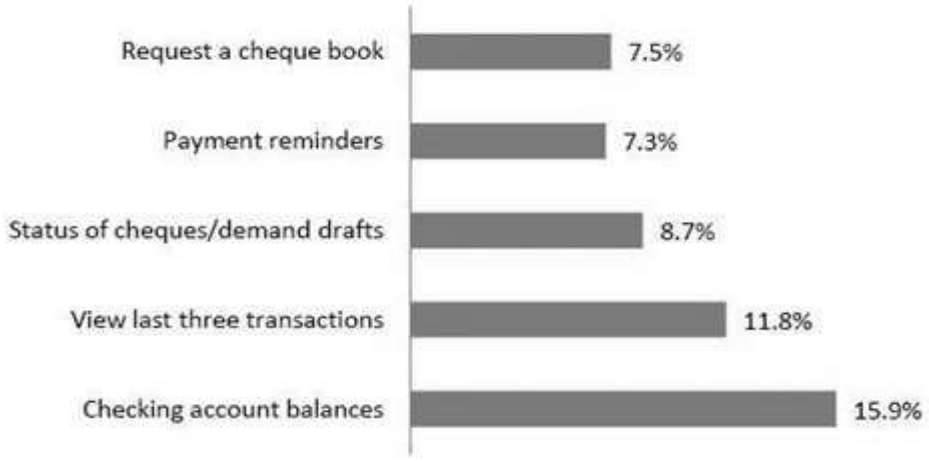
Regulatory Hurdles

Banks are often wearing of allowing non-bank entities (mobile money telecom franchise operators) to receive or make payments on behalf of banks. This limits the service offering where a non-bank microfinance model is followed for mobile banking, such as Western Union's partnership with m-cheque. Trust issues: consumers in less developed countries take time to get used to new mobile technology, especially since it involves trusting someone else with their money.

Mobile Banking Report

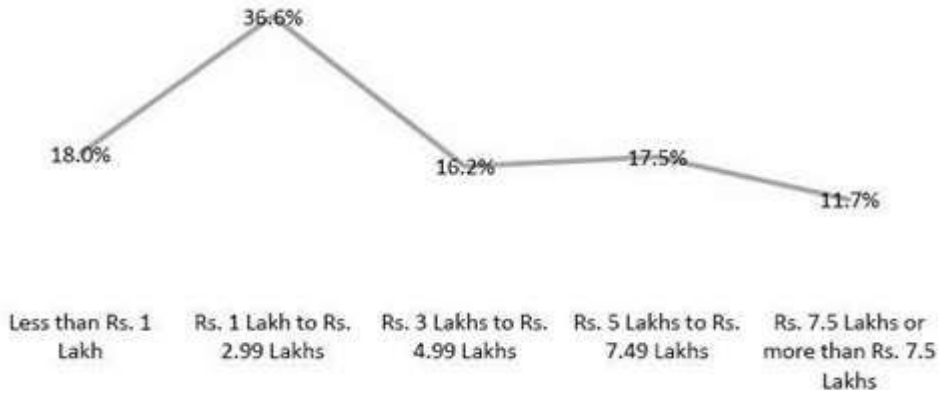
"Most popular services and income profile" (Two month ended March 2009, Urban Indian Mobile Phone Users).

Graph-1: Most Popular Mobile Banking Services



Filtering the data further to understand which income groups in urban India use mobile banking more. As depicted in the chart below, mobile banking is most used by subscribers falling in Rs. 1 Lakh to Rs. 2.99 Lakhs income bracket followed by less than Rs 1 Lakh income bracket. Therefore it is observed, mobile banking is more popular among low income group of mobile users than higher income group of mobile users.

Graph-2: Mobile Banking Users – Income profiled



Many believe that mobile users have just started to fully utilize data capabilities in their mobile phones. Service providers are every day coming up with new services, providing methods to make the solution more easy to use, implementing techniques to improve security, launch of 3G is providing higher data transfer rate and invention of new phones more frequently is driving mobile users towards subscribing to mobile banking services.

In India, where mobile subscribers far exceed fixed line subscribers because of better mobile infrastructure in comparison to fixed line infrastructure has made mobile banking much more appealing in India today. Various players involved in providing mobile banking services (banks, financial institutions, service providers, operators etc) are therefore expecting a potential growth in mobile banking industry in India.

HARDWARES DEVICES FOR MOBILE BANKING

The Internet and online banking provide the convenience of processing bank transactions without the need to visit the local bank. In 2011, mobile banking began offering services geared toward users of smart phones and other Wi-Fi and data-enabled portable devices. There are numerous mobile devices that support this service, such as mobile phones, laptops and tablet computers.

Mobile Phones

Mobile phone use has become commonplace, with users generally carrying them wherever they go. Their use extends beyond the traditional calling and texting. Mobile phones, regardless of manufacturer or network provider, can be used for mobile banking services if they have Wi-Fi or data network capabilities. Banking by mobile phones can be done through three basic platforms--SMS, mobile Web, or mobile client applications. SMS platform is the easiest to use and is supported by most mobile phones; however, it does not provide adequate security.

Mobile Web mode offers a more enhanced experience but it requires the phones to have a Web browser, WAP capabilities and an Internet connection. A mobile client applications platform enables more secure access. Handsets must be able to support different operating systems and applications because client programs need to be downloaded and installed. Hybrid platforms are generally applied to provide more interactive and secure services.

Laptops

Laptops are portable computers that have also become a common gadget carted by users not only to business functions but even recreational activities. Through laptops, people can manage their banking needs when travelling, attending social functions or doing outdoor activities. This is achieved similar to online banking with a desktop computer, but with the convenience of mobility. Some laptops---such as net books---weigh only about three pounds, making them very handy to bring along. Mobile banking is performed securely through the Internet, utilizing the security offered by the bank's websites.

Tablet Computers

The most recent innovation to computer convenience is the development of tablet computers. Tablet PCs weigh only about one and a half pounds, and feature large screens and touch screen operation. Apple, Samsung, Research in Motion and Hewlett-Packard all manufacture their own tablet PC's as of January, 2011. Tablet computers can be used to access banking services much like laptops; their long battery life also ensures the user does not accidentally get disconnected in the middle of a banking transaction.

FUTURE OF MOBILE BANKING

Best practices in mobile banking are quickly emerging, and the nature of the industry is changing. Currently, mobile network operators (MNOs) are using mobile banking as a competitive edge and guarding their market by limiting the provision of these services to clients registered to their network only.

This will change in the future as MNOs collaborate through technology sharing initiatives such as Nokia Money and other microfinance information systems will encourage the interoperability of mobile connection providers. Even though mobile money was off to a good start, some leaders feel there is a lack of innovation in the sector. However, the advent of mobile banking isn't limited to microfinance anymore. Grameen Foundation's recent initiative, AppLab, takes it to a new level.

Mobile Banking Features

Mobile banking does not require a phone number or a bank employee to access banking features. Mobile banking, the use of a mobile phone or handheld device to complete banking transactions without the assistance of a bank employee, is poised to become the next big mental leap for many of us. However, not all mobile banking accounts are equal; the features vary with the capability of the device. Some provide only text responses, while others allow Internet access.

CONCLUSIONS

Recent developments in mobile technology, today, has become a strategic and integral part of banking driving them to acquire and implement world-class systems that enable them to provide products and services have enabled users to convert their handsets from plain tools of communication to more composite m-commerce gadgets.

Nevertheless, only a handful of customers appear to be benefiting from the m-banking user application features that such technologies largely embody .This paper present a new model as an attempt to a better understanding of mobile banking usage based on value using benefit factors in conjunction with sacrifice factors.

Improving customer usage rate of m-banking would have the effects of expanding the information and telecommunications sector along with the financial services industry.

Hence, this paper may enable banks to develop a marketing strategic plan based on perceived value from the customer's point of view. Since Mobile banking is anytime and anywhere, banks need to ensure that their systems remain ready for the same.

REFERENCES

1. "Behavioral Intention Towards Mobile Banking in India: The Case of State Bank of India", (SBI) N. Thamarai Selvan (National Institute of Technology, India), B. Senthil Arasu (National Institute of Technology, India), and M. Sivagnanasundaram (Kirloskar Institute of Advanced Management Studies, India), Vol: 3, Issue: 4. Copyright © 2011.
2. Gupta. S. L., and Mittal Arun. (2008). "Mobile Banking present Status and future Perspectives", Chartered Financial Analyst, pp. 98-100.
3. Ja-Chul-Gu. (2009). "Determinants of Behavioral Intention to Mobile Banking", ICFAI Journal of Marketing, Vol. 36, No. 9, PP.11605-11616.
4. Chung, Namho. (2009). "Effect of Trust and Mobile Banking Satisfaction", Journal of Financial Services Marketing, Vol.28, No.6, pp. 549-562.
5. Laikkanen, Tommy. (2007), "Mobile Banking Innovators and Early Adopters", Journal of Financial Services Marketing, Vol.13, No.6, pp. 86-94.
6. http://technology.cgap.org/category/mobile-banking/page/2/
7. http://www.ehow.com/search.html
8. http://www.doc-txt.com/mobile-banking-services.ppt
9. http://en.wikipedia.org/wiki/Mobile_banking
10. http://www.telecomindiaonline.com/

*****

EMERGING PARADIGMS IN FM RADIO

C. Rajalakshmi[14]

ABSTRACT

The purpose of producing a product is its sale. Each producer explores ways and means of marketing the product and maximizes sales and in this, advertising plays a major role. Radio is one of the major media for advertising. With the growth and expansion of media opportunities, radio has to compete with other media for its share of advertisement pie. Although FM radio is in operation in India since the decade of the nineteen seventies, it was the metro FM by private operators that gave a distinct niche to FM so much. So that now many analysts take FM radio as a different genre in itself. The style, format, content and the personality of Radio Jockeys (RJs) positioned it as a medium for the youth. The FM companies pay a large sum of money to the Government as license fee.

Their "operating expenses are also substantial. FM companies have invested money expecting a return on capital which can be secured only through advertisements. Already, there are several players in the media, including the press, television, cable television etc. Each FM channel has to establish its popularity with listeners to convince the advertisers that their FM is the channel for advertising products and services. This need for generation of ad revenue has stepped up the need for marketing.

Thus it is hardly surprising that FM is the channel which is much talked about these days. Many private companies have taken to commercial broadcasting and there is fierce competition to capture audience with alluring programmes and Marketing holds great importance in such a competitive scenario. The paper deals about the concept of marketing and how it is applied to devising marketing strategies of commercial FM radio channels of AIR and private companies.

KEYWORDS

Commercial, Broadcasting, Marketing, Strategies, FM Radio, Channels, and Companies etc.

INTRODUCTION

Advertising of products and services is the route to rope in more customers and improve a company's image. Radio is an effective, low-cost medium for advertising a company's products. FM radio has today enabled advertisers to reach out to the audiences cost-effectively. In July 2005, the union cabinet approved the second phase of FM broadcasting in private sector, in which more emphasis was given to the growth of services than generating revenue for the government.

The government has allowed foreign companies to venture into setting up of private FM stations within in the present ceiling of 20% foreign capital. Now the Government expects to take a final view in two to three months on the third phase of expansion of FM radio and about 806 radio licenses are expected to be issued and the Government plans to take FM radio to about 283 towns (News from business line New Delhi, March 28 by Mr. Rajiv Takru, Additional Secretary, Ministry of Information and Broadcasting).

It is identified there is a gap in this potential area, that is "conducting a visual reach to understand and learn about when customers usually tuned into the radio channels and then develop a strategy for launching the advertisements accordingly and also selection of appropriate time considering the number of listeners during that time of the day, to market their products". The FM radio medium as a cost effective medium for the advertisers and companies to advertise their products & services and also achieves the objective of coverage.

OBJECTIVES OF STUDY

- To analyze the marketing strategies adopted by FM radio.
- To study the practices of marketing management of FM radio operators.
- To offer suggestions for improvements in their marketing strategies

MARKETING

Marketing is an activity which should not be looked upon in a vacuum or in isolation. It is, in essence, taking a view of the whole business organization and its ultimate objectives. Concern for marketing must penetrate all areas of the enterprises. Marketing emphasizes the belief, handed down for a long time by good marketing people, that the 'customer is king' and his/ her satisfaction must be the ultimate aim of a business activity, if the business unit desires continued success over a long period of time. It is because of this that all business thinking in management must start with identification of a 'need' of a group of likely customers or persons. This leads to identification of the type of 'product' or service to be offered.

[14]Research Scholar, Anna University of Technology, Tamil Nadu, India, vijiguhan@gmail.com

THE MARKETING MIX

Marketing is performed within a certain environment which itself is always changing. The marketing activities have, therefore, to change in consonance with environment in order to be continuously effective. In order to appreciate this process, it is easier to divide the marketing activities into four basic elements such as 4 P's which are also referred to as the marketing mix.

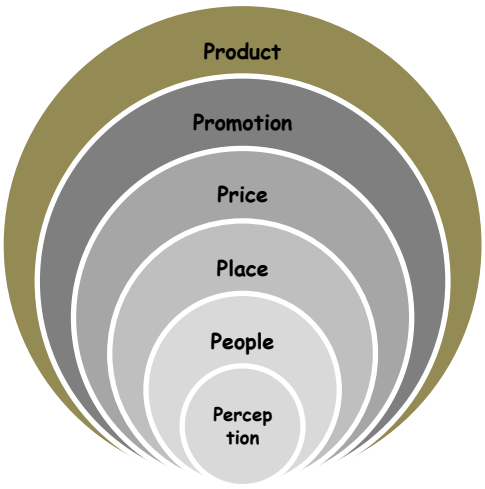
FM RADIO

As a medium, the FM radio provides a great opportunity for the advertisers to advertise their products and services. The FM broadcasts have already become popular in both urban and rural markets. People being tuned to FM radio at the bus stops, tea shops, while commuting and even when they are at home is an evidence of their raising popularity. Reaching mass audience is today the aim of FM station. The consumer segment covers the rich and poor, the young and the aged, the urban and the rural. Research reveals that people listen to FM at home (75%) while driving (45%) and at public places (15%).

MARKETING OF FM RADIO: THE STRATEGIES

The principles and practices of marketing management to be followed by FM radio operators.

Figure-1



Promotion

The promotional strategies of various FM channels are twofold, viz. their strategy to woo the listeners through programs content, the interactivity to keep the audience hooked on the one hand, and to market the station to the industry for selling air time/sponsorship etc, on the other. Currently, radio share is just two per cent of the over Rs 10,000 Crore ad pie. Television on the other hand, accounts for nearly 36 per cent ad spend.

The FM stations were allotted various frequencies 92.5, 93.5, 94.6, 98.3, 102.6 which could be a hindrance in giving a branding niche to various competing channels. The private channels however, did not lose any time in christening respective stations. Not to be isolated, AIR also re-christened its FM I and FM I1 as AIR FM Rainbow and AIR FM Gold. Radio Marche in fact played on the number game 98.3 and FM WIN on its name in their promotional campaigns. Radio Marche, owned by the Bennett & Coleman group can claim to have one of the most visible promotion campaigns and fierce marketing strategies.

Price

FM is free to air for the listeners, but for the advertisements it carries a price referred to as advertising rates.

Place

Place in marketing terminology connotes distribution. As of now, FM is distributed only in metros and some bustling towns where the number of listeners are in millions. The channel operators have no maneuverability so far the place of a radio station is concerned as this is determined by the Government.

Product

With so many channels, FM radio is like a commodity market where brand differentiation will decide the victor. Tune in to any FM station, and one gets an Indian pop, weather news, traffic information, interactive chat ***et al.*** The general perception is that none of the FM stations have been able to create a distinct niche for itself. It is the self-advertisements and the signature tune that probably is the only differential.

Thus FM, besides being around for some time, also has interesting current affairs programmes that helped it retain its listenership. When private channels are allowed to include news and current affairs programmes, it would not only bring in variety, but the differential among various players would also be conspicuous. The other area that would bring in loyal listener base would be various stations' ability of scheduling the programmes at various parts of the day depending on the demographic and user-graphic profile of listeners.

Promotion

The FM operators are using various communication strategies that include direct mailers, meetings, and using media both through advertising space, and reportage to attract the attention of the industry. Large discounts, it is believed are offered by private channels, depending on the negotiating capability of the media buying agencies. AIR feels handicapped as there is no product promotion find with them to attract the space buyers. But despite that, they feel the strength of the programme content and their rapport with the, clients and agencies help them in getting better revenue. The private FM stations have launched a number of promotional strategies to be in focus and gain visibility. Every radio station tries to establish its positioning effectively.

FM, supposed to be a local medium catering more to the retail outlets and local advertisers, has drifted and there is an important reason behind this. To recover costs, FM stations have been vigorously marketing their stations to big-time advertisers who have the money. Advertising of cars, insurance, travel packages that appeal to the upper crust target audience SEC-ABC can be felt all over. SEC is the Socio Economic Classification of audience based on various factors that include education, and occupation and indicated as A/B/C.

Price

The Phase I policy for the privatization of FM radio had a very high fixed license fee structure with an annual escalation of 15%. In the phase II policy, a revenue sharing formula was introduced. Private FM radio sector would shift to a revenue-sharing model from the existing license fee regime. However, revenue-sharing also exists in the media sector. The objective is to "make FM radio a success story". It's better to keep the revenue-sharing figure low than to have a failed project. There has been debate on whether to recommend a revenue-sharing structure or a fixed amount for a period of 10 years; it is firm on revenue-sharing now. **Revenue-sharing will follow payment of a one-time entry fee through a process of bidding.** Revenue-sharing figure is quite low at around 4 %.

While the private FM players had sought revenue-sharing in the band of 2-2.5 per cent, the whereby radio companies had to pay a fixed annual license fee of 4% of gross revenues or 10% of the reserve OTEF (One Time Entry Fee) whichever is higher. The reserve OTEF was 25% of the highest valid bid for that city. The rates among competing brands are competitive. The high expectation of response from the industry to FM both from the Government and operators' perspective has been exaggerated. The speculative bidders further spoiled the show. Over expectation of revenue from FM, an overwhelming initial response from the industry when privatization was announced made the government skew up the license fee. Many bidders were not serious players vanished from the scene. In the process, however, two important considerations were missed, one that the FM would have limited reach, two, radio had gone down in the reckoning of media choice over a period of time, especially with large advertisers due to dipping listenership. It would take some time for FM to get settled when media planners would seriously consider it in their media choice.

Place

FM radio has gained popularity in India, especially with the entry of private players. Radio stations generated revenue of INR 8 bn in 2008; expected to reach INR 18 bn by 2012. Share of Radio advertising was 3.3 % in 2008; expected to reach 4 % in 2012.Place in marketing terminology denotes distribution. As of now, FM is distributed only in metros and some bustling towns where the number of listeners are in millions. The channel operators have no maneuverability so far the place of a radio station is concerned as this is determined by the Government which in turn allowed foreign companies to venture into setting up of private FM stations within in the present ceiling of 20% foreign capital. Now the Government expects to take a final view in two to three months on the third phase of expansion of FM radio and about 806 radio licenses are expected to be issued and the Government plans to take FM radio to about 283 towns. (News from business line New Delhi, March 28 by Mr. Rajiv Takru, Additional Secretary, Ministry of Information and Broadcasting).

People and Perception

In the context of radio two more Ps, namely, people and perceptions are also important. Most of the FM content is geared to the metropolitan youth, and feature a "weird mix of talk shows, sponsored shows, and direct call-ins, the same monotonous stuff'. From the kind of interactive chat that one hears, it is quite clear that the stations are targeting young listeners. In fact, FM is a medium of the young. This gets reinforced if one were to content analyze the programme and the interactive chat on various FM channels on an average day. Various exploratory research studies undertaken by the research industry and at times commissioned by some FM channels have been giving contradictory data about the target audience. This is compounded by the fact that there is no audience-measuring tool as of now to provide authentic data. According to a recent survey in Mumbai, more than 90 per cent radio FM listeners belonged to the home segment. Although radio is perceived to be the medium of the masses by language and content, analysts' feel especially that in case of FM the tone, tenor and personality of the RJ's, the stations are fighting over a relatively narrow segment of Socio Economic Classification - SEC-ABC, though given the profusion of cheap sets, many listeners would belong to SEC-D and E also.

FINDINGS

- Compared to other media, FM radio is the cheapest and also ensures a wide coverage. Hence, advertising through the radio is a good promotional strategy.
- FMCG, telecomm, finance, media and entertainment are using the radio to market their products.
- FM radio serve by playing melodies and keeping the listeners engaged due to the revolution in telecom industry.
- Mobile phones with built in facility they can tune into FM radio stations.
- The listeners can be targeted by the ad agency or company for the purpose of advertising the products.
- FM radio achieved through adopting contemporary strategies to win over the situations.
- In a 'car track' survey done by the IMRB in the four metros it was found that 60-70 per cent of car population was tuning into the radio. Car owners would be a mixed group of young and middle-aged office goers and not necessarily the college youth.
- The reach of FM is the highest among students and working men. According to Indian Readership Survey 2002 (IRS 2002), radio as a medium has grown by 69 per cent and is the fastest growing besides the Internet.
- The average daily listeners in households with FM access are 54 per cent as compared to 85 percent of television viewer. Time spent in listening to radio is 105 minutes as compared to average TV viewers of 135 minutes.

SUGGESTIONS

- FM can be distributed to all areas where the number of listeners can be increased.
- The fixed license fee structure can be liberalized, so that FM can do niche programme.
- The operators must feel comfortable with the money situation and apply-their minds on creativity.
- FM must play different songs, since recent survey says 74 percent of listeners were unable to correctly associate FM programmes.
- Small advertisers find FM ad rates highly prohibitive hence reduce their rates.
- The private stations are working under pressure, it's better to concentrate on SEC-ABC.

CONCLUSIONS

Any new phenomenon takes time to settle down and FM is no exception. With a few players today and hopefully many more tomorrow, the FM channels will have to put their act together in the following areas: improving content, making more meaningful programmes, catering to the needs of a disparate audience, establishing brand loyalty, among its target audience by going beyond interaction on radio to 'establishing radio manch / forums, improving quality of transmission, interface with industry etc.

As the competition is growing with more FM stations coming in, it is becoming important for the existing FM stations to have product differentiation and create a brand image to sustain listenership, and attract more advertisements which is their main source of revenue. RJ talks, events, contests, etc organized by FM stations can get familiarity. The suggestions given could be considered and worked on for further improvisation.

REFERENCES

1. Trivedi, Jay. (2011). "Education An Undetermined Opportunity for Indian FM Radio Industry", Advertising Express, June, pp 27-30.

2. Takru, Rajiv. (2011). "Additional Secretary, Ministry of Information and Broadcasting, AIR News on FM Channels Likely Soon", Business Line, New Delhi, March 28.

3. Sureshbabu, R. (2010). "Emerging Role of FM Radio – A New Advertising Medium", Advertising Express, December, pp. 37-39.

4. Prasad, Gunjan. (2009). "Is the Slowdown an Opportunity for FM radio? ", Campaign India, Jan 29.

5. Kumar, Ravi V., and Annamalai, S. (2006). "FM Radio: The New Advertising Media Opportunity", Marketing Mastermind, May.

6. Mukherjee, Ishita. (2007). "Tuning in: The FM Radio in India", Advertising Express, November.

7. Suzuki, H. "A Statistical Model for Urban Radio Propagation", IEEE Transactions on Communications, Vol. 25, No. 7, pp. 673–680.

8. Mishra, Sita, and Muralie, Sushma. (2007). "Thinking Beyond Mass Media: Changing Trends in Marketing Communication", Journal of Marketing and Communication, Sep-Dec., Vol.3, Issue: 2.

*****

ADVANCEMENT IN TECHNOLOGY AND SUSTAINABLE GROWTH OF SELF-HELP GROUPS

P. Malarvizhi[15] P. Uma Rani[16]

ABSTRACT

The vision of Dr. A. P. J. Abdul Kalam, "India to become super power by 2020", could become a reality, if the nation could generate more of job providers than job seekers. Entrepreneurship is the catalytic agent for the economic development of a nation. This development should happen at the grass root level of the economy, resulting in an inclusive growth of India. Indian women at the bottom of the pyramid have been put on this trajectory development through the concept of Self-Help Groups (SHGs).

NABARD's SHG bank linkage programme is a tremendous step to achieve financial inclusion of hitherto left out women of our nation. Many innovative projects are being implemented by NABARD as an investment for posterity. At the core of these innovations is a desire to improve the outreach and sustainability of the SHG bank linkage programme.

This paper studies the extent of reach or awareness of NABARDs initiatives among SHGs at Madavaram, a suburb in North Chennai. It is found that, it would become imperative in the near future for SHG women to adopt basic Information and Communication Technology (ICT) tools to process their transactions. Unless they get into the main stream of ICT innovation in the banking services, their sustainable growth cannot be achieved.

KEYWORDS

Technology, Innovation, ICT Tools, Sustainable Growth, Micro Finance, and SHGs etc.

INDIA 2020

The entire world is looking upon India to supersede China and emerge as the super power nation, with Dr. A.P.J. Abdul Kalam's mantra, "India 2020" gaining momentum. This will not be a far off dream if our nation could generate more of job providers than job seekers. Entrepreneurship is the catalytic agent for the economic development of a nation. History of many developed countries like Japan and USA have proved that their economic development is the effect for which, entrepreneurship is the cause.

In 2020, the world will have a shortage of 47 million working people but Indian workforce will have a surplus of 56 million people. In order to reap the benefits of this demographic dividend, India will have to explore the unexploited business opportunities at the grass root level. The economic growth of our nation should be an inclusive growth resulting in balanced development of all sections of the society.

Table-1: 2020 Estimate of India's Population

Year	Under 15	15–64	65+	Total
2000	361	604	45	1010
2005	368	673	51	1093
2010	370	747	58	1175
2015	372	819	65	1256
2020	373	882	76	1331

Source: Institute of Economic Growth, New Delhi, Discussions Paper No. 27/2001.

- **2020**: 1,326,093,000,
- **2030**: 1,460,743,000,
- **2040**: 1,571,715,000,
- **2050**: 1,656,554,000.

In order to reap the benefits of this demographic dividend, India will have to shape them as job providers, rather than as job seekers since entrepreneurship is the key to sustainable development of any nation.

[15]Research Scholar, M.S. University, Tamil Nadu, India, malar_mvs@yahoo.co.in
[16]Dean, Karpaga Vinayaga College of Engineering & Technology, Tamil Nadu, India, umapurusothaman@yahoo.co.in

INCLUSIVE ECONOMIC GROWTH OF INDIA

The term 'Inclusive' growth is often used interchangeably with a suite of other terms including such as: 'Broad-Based Growth', Shared Growth', and 'Pro-Poor Growth'.

Inclusive growth allows people to contribute to and benefit from economic growth and results in rapid and sustained poverty reduction. Rapid pace of growth is unquestionably necessary for substantial poverty reduction, but for this growth to be sustainable in the long run, it should be broad-based across sectors, and inclusive of the large part of the country's labor force.

ATTAINABILITY OF INDIA'S INCLUSIVE GROWTH

Inclusive growth can be defined as an equitable allocation of resources in order to benefit every section of society. But the allocation of resources must be focused on the indented short and long terms benefits and economic linkages at large and not just mathematically on some regional and population criteria. By extending access to opportunities more widely, it serves as a key response to the rising inequalities. The concept of few people monopolizing the economic and other opportunities in a country, and restricting the entry of others is a faulty notion. In today's increasingly global, dynamic and competitive economy such notions are often reflective of a stagnant economy and static society.

Inclusive growth is often described as a utopian concept. Utopia refers to an ideal community or society. The notion of inclusive growth strives to build an egalitarian society i.e. one where all the people are treated as equals. But such an idea is usually unachievable in reality, by most nations of the world. We are still trapped within the age-old inequalities and violent class conflicts, with no solutions at sight and yet we dream of an ideal state. Social cohesion and human dignity lie at the core of inclusive growth. It has two mutually reinforcing strategic pillars:

- Sustainable growth to provide economic opportunities to those excluded from current growth models, through creative enterprise and responsible leadership.
- Inclusion of all people to ensure the distribution of opportunities, through investment in education, health and infrastructure or through partnership between the public and private sectors, and the civil society.

CLIMBING THE PYRAMID: THE QUEST FOR INCLUSIVE GROWTH IN INDIA

The Next Phase of India's Growth is Critically Linked to Unlocking Value at the Bottom of the Pyramid

Inclusive growth is all about the bottom of the pyramid -- the poorest of the world benefiting from economic growth. In India, for example, 70 per cent of the population is poor. What is predicable is that the 300 million people at the top of the pyramid will have better lives with the economic growth, but the remaining 700 million will only receive a small benefit. And this situation exists in most emerging markets. Inclusive growth is about changing that -- engaging all the people in the benefits of growth. This is definitely possible.

Importance of Women in Inclusive Economic Growth

Rich getting richer and poor remaining poor is the current scenario of today's India. Poverty and deprivation in rural areas is a stark reality and the situation is more aggravating among India's women. Their real life struggles get buried under poverty line. Unless rural women are not trained to be independent in terms of economic income, a country like ours cannot progress. The necessity for self-employment is an imperative need for the inclusive growth of India.

As the popular saying goes, "If you educate a woman, you educate a family", so is the fact that economic empowerment of rural women is one of the central issues for the balanced development of our nation.

WOMEN EMPOWERMENT

Empowerment of women is a pressing need of the day. Unfortunately, it is least understood. It is therefore very essential to define empowerment for the benefit of all partners.

Empowerment

Empowerment is about people - both women and men - taking control over their lives: becoming conscious of their own situation and position, setting their own agendas, creating space for themselves, gaining skills, building self-confidence, solving problems, and developing self-reliance. It is not only a social and political process, but an individual one as well - and it is not only a process but an outcome too.

Outsiders cannot empower women: only women can empower themselves, to make choices or to speak out on their own behalf. However, institutions, NGOs and Government agencies, can support processes that increase women's self-confidence, develop their self-reliance, and help them set their own agendas.

"When women move forward, family moves, village moves and nation moves"

Economic strength is the basis of social, political and psychological power in the society. A women entrepreneur is a recent phenomenon of late 1960's. Earlier women were involved in self employment mostly making home products like pickles or handicrafts items which could be produced on a very small scale at home to earn money to support the scanty family income. Entrepreneurship can help women's economic independence and improve their social status. Automatically, the women get empowered once they attain economic independence.

SHG AS A TOOL OF WOMEN ENTREPRENEURSHIP DEVELOPMENT

Alleviation of poverty is the core of all developmental programmers. Since, the 1950s, various governments in India have experimented with a large number of grants and subsidy based poverty alleviation programmers but these programmers have not been fully successful in meeting their economic objectives. At this juncture microfinance institution (MFIs) in collaboration with the government, NGOs, social organizations play a very significant role.

Microfinance is seen as provision of financial service to mostly low income people, especially the poor and very poor who are without tangible assets. Microfinance is also the idea that low income individual are capable of lifting themselves out of poverty if given access to financial service. Some study suggests that microfinance can play a role in the battle of poverty.

Prof. Muhammad Yunus, of Bangladesh developed and founded the concept of microfinance. He was awarded to Noble Peace Prize in 2006 for his contribution to institutions like Microfinance and Grameen Bank system. Noble laureate Mr. Yunus founded the Grameen Banks in 1976 to make loans to poor Bangladesh.

Microfinance can help the poor to increase income, build viable businesses and reduce their vulnerability to external shock. It can also be a powerful instrument for self-employment by enabling the poor especially women, to become economic agents of change. Providing financial services to poor people is pretty expensive, especially in relation to the size of the transaction involved. This is one of the most important reasons why Banks don't make small loans.

There are two major models under microfinance namely 1) Self Help Group-Bank Linkage (SHG-BL) and 2) Microfinance institute (MFIs). Self Help Group is a voluntarily formed group with member size of 10-20. Basically Self Help Groups are homogeneous in nature. Members come together for addressing common problems. The amount of saving is within the range of Rs.20-150 per month. They rotate this common pooled resource within the members itself with a very small rate of interest. The president or secretary of SHG usually maintains records of transactions on a daily basis. In India, NABARD initiated SHGs in 1986-87. The SHG concept is to bring banking service to the door steps of the poor, especially the women who have been neglected by the formal financial agencies in the past.

There are very large numbers of institutions, both in the formal and non- formal sectors. They are providing a variety of financial services using different delivery mechanisms. Microfinance institutions include NGOs, federations of SHGs, Mutually Aided Cooperative Societies (MACS), state and national cooperatives which provide specified financial services targeted to the poor.

Empowering Women has become the key element in the development of any economy. The role of micro-credit is to, improve the socio and economic development of women and improve the status of women in households and communities. The micro entrepreneur-ships are strengthening the women empowerment and remove the gender inequalities. Self Help Group's micro credit mechanism makes the members to involve in other community development activities.

Micro credit is promoting the small scale business enterprises and its major aim is to alleviate poverty by income generating activities among women and poor. The rural women are engaged in small-scale entrepreneurship programmed with the help of Self Help Groups. Through that they were economically empowered and attaining status in family and community.

At a time when the Indian economy is growing on a sustainable basis, it is very important to realize that many factors contribute to this growth. In fact, women contribute to a portion of this achievement. In today's scenario, we must remember that any scheme for development or improvement will not be complete unless we ensure that the benefit percolate to the women. The latent strength of rural women is well exhibited in increased credit absorbing capacity of women SHGs.

Organizing the poor women to create income is a challenge. But, unless these women have to be put into the loop of a sustainable livelihood through micro-credit, the benefits won't arrive. The SHGs play a major role in achieving a sustaining livelihood by facilitating the rural women to enter into entrepreneurial activities. Globally, it is slowly proving one of the most effective strategies to neutralize poverty. This helps them to make further income on a regular basis with the money already saved.

SHGs play a vibrant role in making rural women economically self-reliant. SHGs are necessary to overcome exploitation, create confidence for the economic self-reliance of poor, particularly among women, who are most invisible in social structure of our nation.

NABARD'S INITIATIVES FOR SUSTAINABLE GROWTH OF SHGS

The sustainable growth of Women SHGs in the long run depends upon their capacity to adapt themselves to new technological developments. NABARD has introduced many innovative projects towards this issue. The phenomenal growth rate of microfinance sector, especially the SHG bank linkage programme has posed number of issues and challenges which need immediate attention.

Table-2: NABARD's Grant Assistance Extended to Various Partners in SHG-Bank Linkage Programme (As on 31 March 2011)

Rs. in Lakhs

Agency	Sanctions During The Year			Cumulative Sanctions			Cumulative Progress		
	Numbers	Amount	Number of SHG	Numbers	Amount	Number of SHG	Amount Released	SHG Formed	SHG Linked
DCCB	6	112.95	7850	108	793.31	66955	287.22	47203	31454
RRB	3	16.00	1350	120	445.44	49335	193.05	55548	36610
NGO	223	3601.03	69165	2847	12626.84	414338	4471.38	268791	175080
FC	47	12.62	1085	807	82.43	7628	73.68	17321	9642
IRV	3	43.92	2440	71	728.38	42923	80.97	12208	6749
TOTAL	282	3786.52	81890	3953	14622.40	581179	5106.30	401071	259535

Source: www.nabard.org.

In response to this NABARD has initiated a number of innovations basically as an investment for posterity. At the core of these innovations is a desire to improve the outreach and sustainability of the programme. Some of pilot projects designed and initiated are summarized here:

Introduction of Processor / Memory Cards - Application of I.T. in SHG Bank Linkage Programme

There are now many branches of Commercial Banks and Regional Rural Banks that service more than 200 SHG accounts which were hitherto considered impossible. However, welcome the trend may be, the burgeoning numbers have also brought to the fore a host of issues relating to tracking, monitoring and adequately servicing SHG accounts. It was felt that the best way to deal with the huge numbers would be to take recourse to new technologies available.

In general, the branch manager in the rural areas is hard pressed for time and as a result does little for developing the business of the branch or for scouting for new business opportunities for the branch. It was felt that use of Information Technology in the form of processor/memory cards for SHGs and other clients coupled with automation in a branch would serve to solve these vexed issues and leave adequate time for business development work.

Introduction of processor/memory Cards for active clients and SHGs & automation of book keeping in SHGs is expected to reduce paper work, save time and thus improve the efficiency of the field worker. This is also expected to reduce the scope of manipulation, reduce unintended leakages and also maintain up to date books at SHG level.

Time taken for banking by these regular good clients is likely to be reduced considerably. Use of processor/memory cards by SHG customers also adds another set of advantages like effective book keeping, tracking and monitoring of SHGs, reducing the hassles of illiterate SHG members seeking the assistance of the NGO / promoter / local book writer to perform these functions. In addition to prompt upkeep of books by SHGs, auditing of books of accounts, computing interest, could also be ensured with this system. The transaction data of each SHG collected from the field could be consolidated at branch office to generate MIS reports, which the branch staff could effectively use to track the functioning of SHGs, ensure prompt credit linkages and recovery. This coupled with automation of back office operations of the branch would ease the branch manager of a lot of time spent on routine matters and they could use the spare time to build new customers and enhance business relations.

Project on "Computer Munshi" - A Self Sustaining Mechanism to Manage SHG Account & MIS

Quality and regularity of book keeping is the aspect of linkage banking, which is most affected because of the widespread illiteracy amongst the poor SHG women. If ignored for a long time, this has the potential to endanger the sustainability of the Groups. Another related issue of almost equal importance is the MIS, which means passing on the relevant information about the functioning of the SHGs to the concerned stakeholders like SHPIs and banks. PRADAN, an NGO, which has promoted more than 4000 SHGs, very strongly felt that sustaining the groups would be a major problem if a proper accounting system and a stronger MIS and were not put in place urgently. They therefore came up with the idea of Computer Munshies. The idea involves identification of skilled rural youth for the task of higher order accounting by providing training as Computer Munshies (CM). The trained individuals would be equipped with a computer and software to serve 100 to 300 SHGs. The SHG level meeting transaction statement will be send to the CM after every meeting, which will be keyed in by the trained individual using the software which would generate outputs like trial balance, member savings and loan balances. The SHG promoter and the banker could also access data about SHGs from the CM on payment of a fee.

The software for the project has been developed by PRADAN. It captures all the essential data- financial and non-financial. The software also generates number of useful reports. The data could be aggregated at the cluster or block level to make assessment of the functioning of the groups in a specific geo-span. It also facilitates financial analysis, drawing a trial balance, balance sheet, portfolio analysis, member level impact - by capturing the base line data etc. The outputs generated could be useful to all related stakeholders including bankers, social intermediaries and the SHG themselves.

REVIEW OF LITERATURE

K. Venkatalakshmi and N. K. Ambujam, (2012), "Information and Communication technology use frameworks among Self-Help Group women", has examined the extent to which the SHG women seek to use a computer, mobile, or any other ICT tool and also established the relationship between the education level of the SHG women and use of ICT tool.

Y. L. Premkumari, 2011, "Financial inclusion through technology solutions in Indian Banking industry", evaluated how far banking innovation and service improvement through technology like biometrics can bring about financial inclusion. She has focused on the support mechanisms of technology needed for sustainable financial inclusion.

Rakesh Singh, H. P. Singh, C. Sen and S. Kushwaha, (2010), "Adoption of new technology and remunerative prices through Self-Help Groups in Uttar Pradesh", has examined the impact of SHG members on technology dissemination and its adoption.

S. S. Sangwan, "Financial inclusion and Self-Help Groups", has studied the strength of SHG programme to achieve financial inclusion and the scope of SHGs in expediting the financial inclusion in big country like India.

NEED FOR STUDY

With the rapid advent of technology in the extension of banking services, it is unavoidable; rather, it would become imperative for the SHGs to adapt themselves to the basic ICT means of availing micro finance, maintenance of accounts, processing of transactions etc. It is essential to cultivate ICT based banking at the bottom of the pyramid so as to lift the economy onto a higher trajectory of growth.

STATEMENT OF PROBLEM

The realization of SHG women about the need to adapt themselves to ICT means of banking services is very low. They are unaware of the risk of being left out in the process of financial inclusion.

OBJECTIVES OF STUDY

- To study the extent of awareness among SHG women in Madavaram, Chennai, about the basic ICT tools of accessing banking services.
- To analyze the reason for the low degree of awareness about the ICT tools of accessing banking services.
- To make suggestions / recommendations for sustainable development of SHGs through adoption of technology in micro finance.

RESEARCH METHODOLOGY

The researcher has used random sampling technique to select the sample size of 100. A well structured questionnaire comprising of multiple choice and bipolar type questions have been used to collect the Primary data. Secondary data have been obtained from Journals, published reports and websites. A descriptive study using simple percentage analysis has been done.

ANALYSIS & FINDINGS

Table-3: Details of Awareness of ICT Tools

Sl. No.	Variables	YES		NO		TOTAL	
		Number of Respondents	%	Number of Respondents	%	Number of Respondents	%
1.	Awareness of existence of ATM services	97	88.18	13	11.82	110	100
2.	Usage of ATM cards	18	16.37	92	83.63	110	100
3.	Awareness of internet browsing services	24	21.82	86	78.18	110	100
4.	Usage of internet browsing services	09	8.18	101	91.82	110	100
5.	Awareness of processor / memory cards used for book-keeping	-	-	110	100	110	100
6.	Willingness to learn and adopt basic ICT tools	95	86.36	15	13.64	110	100

Source: Primary Data.

- Analysis of the above table reveals that more than majority of the respondents were aware of ATMs due to the presence of ATM kiosks everywhere, but its usage was very low among them.

- Awareness of internet browsing services was limited to nearly 22% and this was also associated with higher secondary educated SHG women.

- The low degree of usage of internet browsing i.e. 8.18% was defined by the women having undergraduate siblings or children.

- None of them were aware of the processor/memory cards being introduced by NABARD; but a very encouraging factor was that more than majority of them i.e. nearly 86% of them were willing to undergo training and learn to adopt ICT tools.

SUGGESTIONS & CONCLUSIONS

Based on the study done by the researchers, the following suggestions are made:

- Awareness should be created about ICT tools among SHGs through their widely used TV media.

- SHG women in suburban Chennai should be trained in the usage of ICT tools.

- The Regional Rural Banks should take the initiative in the implementation of extensive use of smart cards among SHG women.

- Though it may be costly, biometric technology can be used to make ICT tools user friendly among SHG women.

Information and Communication Technology in banking services should be provided in an integrated package to make financial inclusion to reach the grass root level of the economy in the future.

The issues and challenges related to SHG bank linkage programme can be countered effectively by propagation of ICT tools and thus ensure the outreach and sustainability of the programme.

LIMITATIONS OF STUDY

- The scope of the study was restricted to Madavaram area in Chennai.

- The sample size was limited to 100.

- The selection of sample was limited to those using mobile phones.

REFERENCES

1. Singh, Rakesh; Singh, H. P.; Sen, C., and S. Kushwaha. (2010). "Adoption of New Technology and Remunerative Prices through Self-Help Groups in Uttar Pradesh", Indian Research Journal. Ext. Edu. 10 (1), January.

2. Venkatalakshmi, K., and N. K. Ambujam. (2012). "Information and Communication Technology use Frameworks among Self-Help Group Women", European Journal of Social Sciences, ISSN: 1450-2267, Vol: 7 No: 2, pp. 206-212.

3. www.microcapital.org

4. www.microfinancefocus.com

5. www.hindu.com

6. www.news.webindia123.com

7. www.nabard.org

*****

Editor-In-Chief
Pezzottaite Journals,
24, Saraswati Lane, Bohri, Near Modern Dewan Beverages,
Jammu Tawi – 180002, Jammu and Kashmir, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net,contactus@pezzottaitejournals.net

A COMPARATIVE ANALYSIS OF SYSTEM QUALITY OF ERP SYSTEM IN DIFFERENT ORGANIZATIONS

M. Nagalatha[17] P. Uma Rani[18]

ABSTRACT

Organizations are continually facing challenges that provoke them to rethink and adjust their structures, goals, processes and technologies. Many have adopted Enterprise Resource Planning (ERP) system to facilitate allied shifts and become more flexible in order to operate better in such dynamic business environment. Lot of criticisms also lodged against ERP such as a successful ERP project is usually costly and takes a long time to implement. A reduction in implementation failure is possible, if ERP implementations are done according to the recommendations derived from scientific research. There is a gap between the scientific and the practical world. The main goal of this study is to give insight into this gap of knowledge about ERP in terms of System Quality in organizations which are located in India and the rest of the world.

KEYWORDS

ERP, System Quality, End Users, Organizations, and Projects etc.

INTRODUCTION

Many organizations have adopted Enterprise Resource Planning (ERP) system to facilitate allied shifts and become more flexible in order to operate better in dynamic business environment. ERP is a high technical cross-functional information system which is designed to improve organizational performance and competitiveness by streamlining business processes and eliminating duplication of work and data (Kwahk and Ahn, 2010). ERP's promise is to provide an information technology platform aimed at improving "How business is done", allowing organizations to plan and manage their resources in an efficient, productive and profitable manner (Laukkanen et al., 2007).

CRITICISMS ON ERP

A successful ERP project is usually costly and takes a long time to implement (Mabert et al.2003). Implementing ERP have leveraged the competitive advantages of many organizations but in some instances the implementations have led to dramatic failures with irreversible effects. It is very important to evaluate the success of ERP implementation projects since a lot of financial and human resources are invested in it. The main criticisms directed at ERP systems are its inflexibility and long implementation periods.

NEED AND IMPORTANCE OF STUDY

Improving business systems is a central ERP objective but the success of ERP system is fully dependent on how the workers perceive and utilize it. ERP covers a huge number of topics, all integral parts of a very expensive and comprehensive process. There are some central features to be understood about how ERP works. If ERP implementations are done according to the recommendations derived from scientific research, a reduction in implementation failures is possible. There is a gap between the scientific and the practical world, the scientific world has to think about a method to bridge this gap and to find a way to effectively transfer knowledge to the ERP community. The main goal of this study is to give insight into this gap of knowledge about ERP implementation.

REVIEW OF LITERATURE

Bharati, P., and Chaudhury, A. (2006) found a significant relationship between system quality, measured by reliability, flexibility, ease of use, and convenience of access, to decision-making satisfaction in an e-commerce environment. At the organizational level, there exists strong support for the relationship of system quality to net benefits.

Bradley, R. V.; Pridmore, J. L., and Byrd, T. A. (2006) compared system quality and impact of system use at operational, tactical, and strategic levels. The relationship between system quality and impact of use at these various levels was significant. However, when these results were analyzed more closely, it was found that this relationship was not significant at all for formal firms and only significant at operational levels within entrepreneurial firms.

Kositanurit, B.; Ngwenyama, O., and Osei Bryson, Kweku. (2006) identified a significant relationship between perceived ease of use and performance, but no relationship between reliability and performance for individual users of ERP systems.

[17]Assistant Professor, Saveetha Engineering College, Tamil Nadu, India, mvnlatha@gmail.com
[18]Dean, Karpaga Vinayaga College of Engineering & Technology, Tamil Nadu, India, umapurusothaman@yahoo.co.in

Gable, G., and D. Sedera, *et al*. (2008) conceptualized System Quality as a multifaceted construct designed to capture how the system performs from a technical and design perspective. This paper adopts their definition and the proposed 15 measures, which fit to the ERP environment including new quality aspects. As stated by the Information System Success Model, System Quality clearly influences user's work performance and also their satisfaction with the ERP.

CLUSTERS OF SYSTEM QUALITY

The four factors of system quality such as Technological Innovation, Hindrances, Dynamic Implementation and Optimistic Revamp derived through Factor analysis can be clustered as follows:

Table-1: Final Cluster Centers - System Quality

Factors	Cluster		
	1	2	3
Technological Innovation	4.29	2.76	3.43
Hindrances	1.61	1.63	1.63
Dynamic Implementation	4.10	4.19	2.60
Optimistic Revamp	4.35	4.37	4.30

Source: Computed Data.

The characteristics of the typical case for each cluster of System Quality are reflected in the final cluster centers. The statistical evaluation for the clusters of Table-1 is described as follows:

The clients in cluster 1 have a strong agreement (4.29) with Technological Innovation provided by ERP and also have a disagreement (1.61) towards the Hindrances in implementing ERP. So this group is known as **'Aficionados'**. Clients in cluster 2 tend to have discrepancy (2.60) towards Dynamic Implementation of ERP. This group may be described as **'Adroit'**. ERP users in cluster 3 have a strong concord (4.37) in Optimistic Revamp by ERP. This group is labeled as **'Sanguine'**.

Table-2: Frequency of System Quality Clusters

Clusters	Frequency	Valid Percent
Aficionados	417	80.3
Adroit	62	11.9
Sanguine	40	7.7
Total	519	100.0

Source: Computed Data

The sample unit comprises 80.3% of Aficionados. It is found 11.9% ERP users are Adroit. Also the percentage analysis revealed 7.7% ERP users as Sanguine.

The Association between the Clusters of System Quality & Two Different Types of ERP Users

The sample respondents were segmented into three heterogeneous clusters on System Quality namely Aficionados, Adroit and Sanguine by Cluster analysis. To test its significance the hypothesis "There is no association between clusters of System quality and types of users of ERP" is framed.

Table-3: Cross Tab - System Quality & Types of ERP Users

Type	System Quality Clusters			Total
	Aficionados	Adroit	Sanguine	
Indian organizations	164 (81.2%)	23 (11.4%)	15 (7.4%)	202 (100%)
Foreign organizations	253 (79.8%)	39 (12.3%)	25 (7.9%)	317 (100%)
Total	417 (80.3%)	62 (11.9%)	40 (7.7%)	519 (100%)

Source: Computed Data.

Table-4: Chi-Square Tests - System Quality & Types of ERP Users

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.150(a)	2	.928
Likelihood Ratio	.151	2	.927
Linear-by-Linear Association	.118	1	.731
N of Valid Cases	519		

a: 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.57.
Source: Computed Data.

It is inferred from the above table that most of the Indian ERP users (81.2%) are in cluster 1"Aficionados" and the maximum of foreign ERP users (79.8%) are in the same cluster as well. It is followed by the Chi square value .150, significance value .928 which shows that the hypothesis is accepted at 5% level. It has been concluded that there is no association between types of ERP users and clusters of System quality. The result implies these three clusters are equally distributed in Indian as well as foreign ERP users. The perception of Indian and foreign ERP users towards these System Quality factors are one and the same.

Significant difference with respect to System Quality

The Indian and foreign ERP users differ significantly in their opinion regarding the two variables such as Eradication of mental stress by ERP and Unattended complex processes outside ERP system. In both the above mentioned variables, the foreign ERP users express great conformity; whereas, the Indian ERP users convey their concurrence to these variables at a lower measure, but with respect to parameters such as Error free system, Speed of transactional processes, Economical to maintain and operate Simple navigation through toolbars, Diminishing cost of ownership, Effective transmission of data across functional areas, Cater to all functional needs and Business process re engineering the Indian and foreign ERP users have same sensitivity.

FINDINGS

- The perception of Indian and foreign ERP users towards System Quality factors are one and the same.
- Indian and foreign ERP users differ significantly in their opinion regarding the two variables of system quality such as Eradication of mental stress by ERP and Unattended complex processes outside ERP system. The Indian ERP users when comparing with their foreign counterparts are still under mental stress even after implementation of ERP and this can be associated with their perception of unresolved complex business processes outside ERP system.

SCOPE FOR FURTHER RESEARCH

ERP is an evolving phenomenon whose processes, characteristics and benefits may change over time. Thus, future researches can help to recognize these changes.

There is a need for future research on the association between ERP implementations and performance because of the increasing investment in ERP systems and the continuous improvement and updates of ERP systems.

Future research may be directed with pertinent questions on the level of process change required during ERP implementation that should be considered in the early stage of the company's decision making in ERP implementation.

REFERENCES

1. Kwahk, K., and Ahn, H. (2010). "Moderating Effects of Localization Differences On ERP Use: A Socio-Technical Systems Perspective", Computer in Human Behavior, Vol.167, pp.842-52.

2. Laukkanen, S.; Sarpola, S., and Hallikainen, P. (2007). "Enterprise Size Matters: Objectives and Constraints of ERP Adoption", Journal of Decision Systems, Vol.15:1, pp. 23-53.

3. Mabert, V. A.; Soni, A., and Venkataramanan, M. A. (2003). "Enterprise Resource Planning: Managing the Implementation Process", European Journal of Operational Research, Vol. 146, pp. 302.

4. Bharati. P., and Chaudhury, A. (2006). "Product Customization on the Web: An Empirical Study of Factors Impacting Choiceboard User Satisfaction", Information Resources Management, 19(2), pp. 69–81.

5. Bradley, R. V.; Pridmore, J. L., and Byrd, T. A. (2006). "Information Systems Success in the Context of Different Corporate Culture Types: An Empirical Investigation", Journal of Management Information Systems, Vol: 23(2), pp. 267–294.

6. Kositanurit, B.; Ngwenyama, O., and Osei-Bryson, Kweku. (2006). "An Exploration of Factors that Impact Individual Performance in an ERP Environment: An Analysis Using Multiple Analytical Techniques", European Journal of Information Systems, Vol: 15(6), pp. 556–568.

7. Gable, G., and D. Sedera, *et al*. (2008). "Re-conceptualizing Information System Success: The IS-Impact Measurement Model", Journal of the Association for Information Systems, Vol: 9(7), pp. 377-408.

*****

ICT MANAGEMENT: A CONCEPTUAL OVERVIEW

D. Lavanya[19] R. Gayatri[20]

ABSTRACT

Information System / Information and Communication Technologies (IS/ICT) Management Examples Team Quest ITC Management. Implementation based on reference model is much faster and easier then traditional "building from scratch "a real business environment.

KEYWORDS

Information, Organization, Goals, and Communications Technology etc.

WHAT IS ICT?

ICT is an acronym that stands for Information Communications Technology.

ICT MEANS

- To bring change to a organization,
- To create awareness,
- To ask the relevant questions,
- To get information flow,
- So where is the problem?

Figure-1

"It is generally much easier to *kill an organization* than change it substantially."

ALL OTHER WAYS SEEM TO FAIL

- Traditional Consulting fails (in many cases),
- All corporate resources fail,
- Consultants working at business line level fail,
- So where to start? Who can make THE difference, which really has POWER, who must change FIRST and WHY?

THE BOTTLENECK IS AT THE TOP OF THE BOTTLE

"Where are you likely to find people with the least diversity of experience, the largest investment in the past, and the greatest reverence for industry dogma?

At the top!"

*"Do you know about an old idea that should have **changed** already long time ago?"*

*"Want to hear a story from a TOP guy who was really totally **WRONG** about his idea on change?"*

"I think there is a world market for maybe five computers."

"If it isn't broke"

"Break it before others do"

"Change the rules before somebody else does."

[19]Research Scholar, St. Peter's University, Tamil Nadu, India, lavanya.sd@gmail.com
[20]Professor, St. Peter's University, Tamil Nadu, India, r.gayatrisuresh@yahoo.com

However, apart from explaining an acronym, there is not a universally accepted definition of ICT? Why? Because the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis. It's difficult to keep up with the changes - they happen so fast.

Let's focus on the three words behind ICT:

- Information,
- Communications,
- Technology.

Managing Information Communication Technology (ICT) will enable organizations to get more out of their current equipment and also to make better decisions around the purchase of new equipment and ICT developments.

- So we know where to start.
- But we know as well it will be difficult.
- Still the ONLY way in.

INFORMATION AND COMMUNICATIONS TECHNOLOGY

An umbrella term that covers computer and network hardware and software, mobile phones etc. and the various applications and services connected with them:

Hardware, Mobile, Mobile, hone, Network, Software

"Organizations will still be critically important in the world, but as '*organizers*,' not 'employers'!"

WHY MANAGING ICT IS IMPORTANT

Understanding how to manage ICT is the key for organizations of all sizes undertaking a number of different roles. Small organizations with one computer still need to manage their ICT as it is likely to be used for important tasks, such as:

- Writing documents more efficiently.
- Managing accounting and budgeting.
- Recording contact with clients more accurately and in more detail.
- Improving communications within the organization and with others.

Larger organization may use ICT to carry out increasingly complex functions which may include complicated software solutions and hardware set-up.

- Why Be Concerned About Managing IT.

Managers increasingly face important decisions about IT. It is too important to be ignored, even by people who feel they don't know much about it. But why do we single out IT? Why not write about managing filing cabinets, or managing notice-boards?

There are several reasons:

- IT is expensive. It isn't just the cost of computers, but also the training and support needs that are so necessary if the equipment is to be used successfully.
- IT is complicated. As we know all too well.
- IT is important. Most organizations use IT extensively, and are likely to become more dependent on computers in future.
- IT is used to manage information. This is the key issue: few people would argue with the fact that information is the lifeblood of our organizations.

FOCUSING ON YOUR GOALS

No matter how important and difficult IT can be, we must not lose sight of the fact that it is only a means to an end; it isn't an end in itself. We have to devote time and energy to managing IT; we need technical skills to get the best from it; we spend a lot of money on it - but the use we make of it should not be driven by IT itself, but by the needs of our agency. It is too easy to get lost in the complexities and technicalities of IT and forget what we are trying to achieve. It is too easy for managers to let IT staff baffle them with technicalities, and in effect withdraw from the planning process. And technical staff can become too absorbed in the technology and lose sight of the broader goals. So, in developing our approach to managing IT, we must ensure that our use of IT is driven by the goals of the organization and doesn't begin to take on a false logic of its own. At worst, IT policy can become little more than the preface to a shopping list for new equipment.

The old adage still holds true:

- Decide what you want to do.
- Choose software that will achieve that end.
- Select hardware to run the software.

Your goals must come first and they will determine your decisions on the right course of action.

You must express your goals in non-technical terms, and they must be set by people who can see the wider picture. Otherwise you run the risk of missing a crucial piece of the jig-saw.

ICT covers any product that will store, retrieve, manipulate, transmits or receives information electronically in a digital form".

For example, personal computers, digital television, email, robots. So ICT is concerned with:

> **The storage**, **retrieval**, **manipulation**, **transmission** or **receipt** of digital data. Importantly, it is also concerned with the way these different uses can work with each other.

In business, ICT is often categorized into two broad types of product:

1. **The traditional computer-based Technologies** (things you can typically do on a personal computer or using computers at home or at work); and

2. The more recent, and fast-growing range of **digital communication technologies** (which allow people and organizations to communicate and share information digitally)

Let's take a brief look at these two categories to demonstrate the kinds of products and ideas that are covered by ICT:

a) ***Traditional Computer Based Technologies:***

These types of ICT include:

Table-1

Application	Use
Standard Office Applications - Main Examples	
Word processing	E.g. Microsoft Word: Write letters, reports etc
Spreadsheets	E.g. Microsoft Excel; Analyze financial information; calculations; create forecasting models etc
Database software	E.g. Oracle, Microsoft SQL Server, Access; Managing data in many forms, from basic lists
Presentation software	E.g. Microsoft PowerPoint; make presentations.
Desktop publishing	E.g. Adobe In design, Quark Express,
Graphics software	E.g. Adobe Photoshop and Illustrator; Macromedia Freehand and Fireworks;
Specialist Applications - Examples (there are many!)	
Accounting package	E.g. Sage, Oracle; Manage an organization's accounts including revenues/sales, purchases, bank accounts etc.
Computer Aided Design	Computer Aided Design (CAD) is the use of computers to assist the design process.
Customer Relations Management (CRM)	Software that allows businesses to better understand their customers by collecting and analyzing data.

The C part of ICT refers to the **communication** of data by electronic means, usually over some distance. This is often achieved via **networks** of sending and receiving equipment, wires and satellite links.

The technologies involved in communication tend to be complex. These relate primarily to the **types of network** and the ways of connecting to the Internet. Let's look at these two briefly:

Internal networks

Usually referred to as a local area network (LAN), this involves linking a number of hardware items (input and output devices plus computer processing) together within an office or building.

The aim of a LAN is to be able to share hardware facilities.

External networks

Often you need to communicate with someone outside your internal network. In this case you will need to be part of a Wide Area Network (WAN).

The Internet is the ultimate WAN - it is a vast network of networks.

ICT IN A BROADER CONTEXT

Your ICT course will almost certainly cover the above examples of ICT in action, perhaps focusing on the use of key applications such as spreadsheets, databases, presentation, graphics and web design software.

It will also consider the following important topics that deal with the way ICT is used and managed in an organization:

- ✓ The nature of information (the "I" in ICT); this covers topics such as the meaning and value of information; how information is controlled; the limitations of ICT.
- ✓ Management of information - this covers how data is captured, verified and stored for effective use.

Information systems strategy - this considers how ICT can be used within a business or organization.

As you can see, ICT is a broad and fast-changing subject. We hope our free study materials (revision notes, quizzes, presentations etc) will help you master IT!

MANAGEMENT ESSENTIALS WITHIN THE SCOPE OF ICT MANAGEMENT RESPONSIBILITIES

- ✓ Ensure business continuity with the help of an adequate service and system architecture;
- ✓ Improve the profitability and cost-efficiency of the company through automation and effective utilization of information;
- ✓ Enable business growth through scalable solutions.
- ✓ Coordination and effective resourcing of ICT development.

ICT'S ROLE IN THE COMPANY

To serve as an enabler of corporate business strategy and to bring benefit to the company, ICT Management must actively help and challenge the Business to identify its needs and to find the best possible solutions. – It focuses on the needs of the Business and helps identify these needs. This is about finding a balance between the demand of the Business and the supply of ICT: The ICT management must also inform the Business of new opportunities from advances in information technologies and systems.

The identified challenges faced by corporate ICT departments include:

- ✓ Company management has difficulty grasping the entire ICT landscape and understanding what ICT operations and their management entail.
- ✓ ICT professionals unnecessarily mystify ICT and related management tasks, presenting them as complex issues requiring considerable industry-specific knowledge.
- ✓ Interaction between Business and ICT management, including decision-making and responsibility sharing with respect to implementation, lacks uniform operational models.

ICT STANDARD – GOALS OF THE STREAMS

Figure-2

ICT shall constitute an operation that is well-managed, is adequately authorized by the company management, and produces results as agreed upon with the Business.

Background and Purpose of the ICT Standard

The purpose of a company is to create profit for shareholders and benefit for customers. ICT supports these objectives. Investments and resourcing for implementation and management of ICT vary according to company size, but all organizations have one objective in common:

Requirements regarding deliverables and strategic compliance should at all times govern the execution of ICT-related tasks. ICT management must comply with these requirements. Optimally, ICT management together with the Business possesses the ability to integrate and harmonize business processes.

The field of ICT has lacked well-defined and uniform operating models. Companies have only recently been able to get acquainted with internationally developed models, some of which – such as ITIL, COBIT, PMBOK and PRINCE2 – have become standards or de facto standards. They are useful tools, but their intended purpose, points of view and fields of application vary because they were originally developed to meet the needs of specific fundamentals (auditing, service provisioning, projects, etc.). The positive impacts of existing international models and standards and their principles were acknowledged in the development phase of this new standard.

More importantly, though, the challenges faced by corporate ICT departments were taken into consideration while developing the ICT Standard (see "ICT Standard – The Beginning").

Focusing on hands-on ICT management, the ICT Standard combines the practical experience and the positive features of different models, including formalized structure, communication methods, hierarchy of responsibilities, and monitoring and documentation of deliverables with clear guidelines for how to apply them in practice.

ICT HEALTH CHECKLISTS

Preparing an IT strategy, facing up to a key decision, or even just reviewing the way you manage IT day by day, is unlikely to be easy. One of the hardest things may know where to start.

There are three sets of checklists:

- ✓ Checklist A for Management Committees and Senior Management Teams,
- ✓ Checklist B for the staff member who has ICT management in their job description,
- ✓ Checklist C for computer users.

Although the checklists look at different areas of responsibility they do hang together as a whole. It would be hard, for example, to meet all the criteria for effective users if the ICT management and overall management were seriously deficient.

There are three levels for each section:

- ✓ **Level 1** contains the elements that every organization really ought to try to reach, in order to ensure its basic health.
- ✓ **Level 2** is a realistic target for those who want to make the most effective use of IT.
- ✓ **Level 3** introduces advanced elements which are more likely to be relevant in larger organizations or where an agency depends heavily on IT and needs to be ahead of the field. Even then, most agencies will find that they do not need to reach Level 3 on every item.

BUDGETING AND FINANCE

Budgeting and Funding guide you through important areas to help you plan and finance your ICT:

Budgeting and Funding

Budgeting for, and funding the technology in your organization.

How to cost and Fund ICT

This is primarily a resource for those with responsibility for fixing, managing and/or overseeing their organization's ICT needs:

- ✓ Walk you through simple ways to determine what ICT strategies, ideas and projects are most beneficial to your organization.
- ✓ Help make smart hardware and software choices that will improve your efficiency.
- ✓ Help identify what you need to invest when implementing and sustaining your use of ICT.
- ✓ Offer techniques to develop a successful funding strategy.

Calculating Your Technology Budget

Organizations need to have a realistic annual budget for IT. This article provides instructions for using our downloadable Excel spreadsheet to provide you with a simple way to calculate your IT budget. The spreadsheet breaks down the items of expenditure into the following areas:

- ✓ Hardware & Infrastructure, Software, Internet, Training, Support, Consumables and Others.

Staff Responsibility for IT Support

The underlying role of computers is to enable staff to get on with delivering a service more effectively. Most users do not want to be technical experts, or to worry about how well the computer is performing. However, somebody in your organization has to do this act. The job description for an IT co-coordinator or IT support worker could include:

- ✓ Acting as systems manager for your network (if you have one).
- ✓ Providing IT support to computer users within the office (including inducting new staff).
- ✓ Initial troubleshooting of IT problems and resolving them wherever possible.
- ✓ Ensuring that data is routinely backed up.
- ✓ Ensuring that all staff is able to organize their computer files in an effective way whether they are shared or for individual use.
- ✓ Managing the distribution of documents in electronic format and of standard layouts and templates for documents.
- ✓ Ensuring that software licenses are adhered too.
- ✓ Overseeing computer security and Antivirus precautions.
- ✓ Acting as Data Protection Officer (although under the 1998 Act this is no longer exclusively an IT issue).
- ✓ Liaising with external support (the link person).
- ✓ Keeping a log of all IT problems with their resolution.
- ✓ Keeping an inventory of all computer equipment, keeping maintenance records, and ensuring adequate maintenance provision.
- ✓ Identifying bottlenecks and problems, making recommendations to solve them, keeping standard software and hardware recommendations under review, and providing input into future IT strategy.

External Support

Few organizations have the resources to cover all their IT support needs in-house. Some issues, like network troubleshooting, require a high level of specialist skill and are only required periodically; it isn't cost effective to develop the necessary expertise in-house. You cannot, however, contract out everything. Some problems or routine operations are too simple, too frequent, or too urgent for that.

ICT INFRASTRUCTURE MANAGEMENT

Information and Communication Technology (ICT) management processes recommend best practice for requirements analysis, planning, design, deployment and ongoing operations management and technical support of an ICT infrastructure.

The infrastructure management processes describe those processes within ITIL that directly relate to the ICT equipment and software that is involved in providing ICT services to customers: (1) ICT Design and Planning, (2) ICT Deployment, (3) ICT Operations, and (4) ICT Technical Support.

- ✓ **ICT Design and Planning**

  ICT design and planning provides a framework and approach for the strategic and technical design and planning of ICT infrastructures. It includes the necessary combination of business (and overall IS) strategy, with technical design and architecture. ICT design and planning drives both the procurement of new ICT solutions through the production of statements of requirement ("SOR") and invitations to tender ("ITT") and is responsible for the initiation and management of ICT Programmes for strategic business change. Key outputs from design and planning are:

  - o ICT strategies, policies and plans,
  - o The ICT overall architecture & management architecture,
  - o Feasibility studies, ITTs and SORs,
  - o Business cases.

- ✓ **ICT deployment management**

  ICT deployment provides a framework for the successful management of design, build, test and roll-out (deploy) projects within an overall ICT programme, but it has a broader focus to include the necessary integration of release management and both functional and non functional testing.

- ✓ **ICT Operations Management**

  ICT operations management provides the day-to-day technical supervision of the ICT infrastructure. Often confused with the role of incident management from service support, operations has a more technical bias and is concerned not solely with incidents reported by users, such as: output management, job scheduling, backup and restore:

  - Network monitoring/management,
  - System monitoring/management,
  - Database monitoring/management
  - Storage monitoring/management.

  Operations are responsible for the following:

  - A stable, secure ICT infrastructure,
  - A current, up to date operational documentation library ("ODL"),
  - A log of all operational events,
  - Maintenance of operational monitoring and management tools,
  - Operational scripts,
  - Operational procedures.

- ✓ **ICT technical Support**

  ICT technical support is the specialist technical function for infrastructure within ICT. Primarily as a support to other processes, both in infrastructure management and service management, technical support provides a number of specialist functions: research and evaluation, market intelligence (particularly for design and planning and capacity management), proof of concept and pilot engineering, specialist technical expertise (particularly to operations and problem management), creation of documentation (perhaps for the operational documentation library or known error database). There are different levels of support under the ITIL structure, these being primary support level, secondary support level and tertiary support level, higher-level administrators being responsible for support at primary level.

  Good Example of ICT: Team Quest Addresses ICT Infrastructure Management.

CONCLUSIONS

When implementing structured ICT management system in an organization, it is highly desirable to exploit the "best practices". We do not expect to use it without changes, because customization is needed for each implementation. The duration of implementation of the ICT management system is much shorter than building it from scratch.

ICT enables managers and administrators to up data and record changes in the organization or in the management, to produce documents regarding operational activities of the management to support decision and act making due to the fact that Finally ICT could help the staff who are all working in the organization to solve the problems due to the fact that the computer and the systems providing accurate information relevant to the problem encountered that need to be solved.

REFERENCES

1. Caldow, J. (2000). E-Government: A G-to-Market Strategy, IBM Institute for Electronic Government, Washington DC.

2. Coombs, R., and Hull, R. (1996). "The Politics of IT Strategy and Development in Organizations", in W. Dutton (Ed.) Information and Communication Technologies: Visions and Realities, Oxford University Press, Oxford.

3. Dufner, D.; Holley, L., and Reed, B. (2002). Can Private Sector Strategic Information Systems Planning Techniques.

4. Northrop, A. (2002). "Lessons for Managing Information Technology in the Public Sector", Social Science, Computer Review, 20, 2, 194-205.

5. UNDPEPA. (2002). Benchmarking e-government – A global perspective, Accessed 02/17/05 from: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan008626.pdf

6. Ward, J. (2003). Principles of Information System Management, Rutledge Publishers, New York.

*****

FINANCIAL OUTSOURCING: A CONCEPTUAL STUDY

Senthil Kumar[21]

ABSTRACT

Financial outsourcing involves the transfer of the management and/or day-to-day execution of an entire business function to an external service provider. The client organization and the supplier enter into a contractual agreement that defines the transferred service.

The client agrees to procure the services from the supplier for the term of the contract. Business segment typically outsourced includes information technology, human resources, facilities and real estate management, and accounting.

Any companies also outsource customer support and call center function like telemarketing, customer service, market research, manufacturing, designing, web development, content writing, ghost writing and engineering.

KEYWORDS

Financial Outsourcing, External Service Provider, and Customer Support etc.

INTRODUCTION

Financial services business throughout the world are increasingly using third parties to carryout activities that the business themselves would normally have undertaken. Industry research and surveys by regulators show financial firms outsourcing significant parts of their regulated and unregulated activities.

OBJECTIVES OF STUDY

- To understand different types of financial outsourcing;
- To find out the current trends in financial outsourcing;
- To analyze the challenges faced in India.

TYPES OF FINANCIAL OUTSOURCING

Accounting Services

- Bookkeeping services are focused to help customer with the management, accounting and tax preparation needs thereby reducing their finance and accounts operating costs.
- Write-up services are the entry and maintenance of all accounting transactional information and the creation of general ledgers and finance and accounts operating costs.
- Receipt and management of all paper-based payables document.

Resolution and Proactive Management

- Audit and control mechanisms to eliminate the risk of duplicate payments and support recovery and reclamation through all aspects of payments made in minimal time to reduce customer floating costs.

Accounts Payable and Receivable Services

Account payable services includes utility bill management, travel and expenses processing, tax reporting, supplier management, special project reports, and customer service.

Accounts payable leads to cash flow and also essential for maintaining a strong vibrant business. This enables customers to increase their control on every account with consistent follow-up on outstanding invoices financial reporting services. It shows overall profitability of the organization.

Financial Reporting

It helps to report financial service. It helps the customer to take informed business decision, provide competent financial reporting services. It shows overall profitability of the organization.

[21]Assistant Professor, Karpaga Vinayaga College of Engineering & Technology, Tamil Nadu, India, senthil_wise64@yahoo.in

Account Reconciliation

Amount reconciliation is an integral part of a company's internal financial controls. Accurate account reconciliation reports are an indication of affective tracking and interim control. Accounting reconciliation is a vital tool for company auditors to determine the veracity of a company's financial statement and its internal reporting.

Tax Preparation Services

As mainland tax services cost increase, more and more accountants and companies are opting to outsource tax preparation services to help minimize operating costs and maximize efficiently and profit.

The tax related services are tax return processing, tax preparation services & vat return services outsourcing tax related services can help the client save on cost, time, money, effort and the same time benefit from professional and cost-effective services. Experience maximized efficiency, minimized costs and a well-organized tax season

Financial Analysis Services

- Professional interpretation of Financial Data,
- Information for Action,
- Better Technology,
- Business Transformation,
- Transparency and Regulatory Compliance,
- Knowledge Management.

Payroll processing

Outsourcing payroll processing service will effectively reduce the cost of operation by 40-50% simultaneously increasing the profitability manifold and help to concentrate more on core business.

INSURANCE SERVICES

Life Insurance Outsource Services

- Fresh business acquisition,
- Administration & Customer support service,
- Billing service & Claims processing,
- Marketing and reference data informatics,
- Claims servicing & Agency administration.

Property and Causality Insurance

- Personal and commercial business acquisition,
- Claims servicing & Policy administration processing,
- Customer and commercial support services,
- Billing service & Claims processing,
- Marketing and reference data informatics,
- Claims servicing,
- Agency administration processing.

Annuity Insurance

- Business acquisition and installation,
- Administration,
- Customer support services & Billing service,
- Asset management & Claims processing,
- Marketing and reference data information,
- Claims servicing & Agency administration,
- Regulatory coverage.

POLICY ADMINISTRATION

Life insurance policy administration outsourcing services property and casualty insurance policy administration outsourcing services annuities-policy administration outsourcing services security concerns of outsourcing insurance services.

AGENCY MANAGEMENT

- Commission management,
- Reporting & Accounting,
- Documentation and imaging / indexing,
- Automated tasks,
- Market and data analytics,
- Customer help desk.

PLAYERS IN FINANCIAL OUTSOURCING

- Datacons-software development India,
- Trinity partners-BPM, USA&I India,
- Banket India- banking and technology portal,
- Sundaram finance ltd-non-banking financial services India,
- Global equations-offshore outsourcing advisors USA, UK & India,
- Thomas and alex-financial services outsourcing Bangalore, India.

CURRENT OUTSOURCING TRENDS

- Outsourcing in traditional areas like customer care, financial services, manufacturing, IT, ITES is growing.
- Large multinational companies are investing in captive BPO units in supplier countries in multiple locations, to reduce risk and control quality.
- Outsourcing is becoming more sophisticated. Customers are looking for business process excellence, speed to market, improvement in quality, benchmarking to world-class standards.
- CEOs are involved to ensure the long-term success of strategic off shoring decisions. On their part, suppliers understand that they must compete globally and that outsourcing will play a more transformational and strategic role for the client.
- There is increasing global competition and pressure on margins from emerging lower-cost outsourcing destinations.
- Risk factors for outsourcing like terrorism and war, disaster and disease make contingency plans a necessity.
- The IT industry will see roughly 10 to15% of its jobs move overseas during the next ten years, inviting more political debate.
- For the past two decades, china has been growing at an astounding 9.5%a year and India by 6%. They are impacting the global economy and leading the outsourcing revolution.

FINDINGS

- Outsourcing expenditure will continue to rise.
- More countries will find outsourcing attractive, creating a multi-polar world. Following the lead of the US and UK, the European Union markets will expand their off shoring programs, while Japan will increasingly look to china for its needs.
- Customers will take greater control in driving and designing deals.
- The interlinking of the supply chains brought about because of outsourcing will create stability as companies will put pressure on government to avoid wars.

- Risk factors and unexpected occurrences like war, terrorism, disease, natural disasters and economic upheavals can throw a wrench in the works.
- The rising price of oil will put increasing pressure on companies to both utilize technology and outsource to remain profitable.

OPPORTUNITIES AND CHALLENGES FACED IN INDIA

- In the initial stage where payroll processing services and some accounting is being done for large American companies.
- This trend will continue and soon a full range of accounting and tax services will be provided by Indian companies.
- Rising competition & Infrastructure.
- Human resource and training.

CONCLUSIONS

In this busy business environmental world no one has time to stand and stare, then how the large firms can maintain their financial records? It's the most important season for booming financial outsourcing. There are chances for arising some problems in this method but it's one of the essential things for the firms. In future it may attain a vital-role.

REFERENCES

1. Ilan, Oshri; Kotlarsky Julia, and Willcocks Leslie. (2009). The Handbook of Global Outsourcing and off shoring, Palgrave McMillan, ISBN 978-0-230-23550-2.
2. Peter Bendor-Samuel. (2000). Turning Lead into Gold: The Demystification of Outsourcing, ISBN 1-890009-87-3.
3. Deo Bardhan, Ashok, and Cynthia Kroll. (2003). The New Wave of Outsourcing.
4. Brudenall, Peter. (2005). Technology and Offshore Outsourcing Strategies ISBN 1-4039-4619-1
5. Dobbs, Lou. (2004). Exporting America Why Corporate Greed is Shipping American Jobs Overseas, ISBN 0-446-57744-8.
6. Christopher, M. (2001). Outsourcing the American Dream, October, Writer's Club Press, ISBN 0-595-20148-2.
7. Erber, Georg, and Aida Sayed –Ahmed. (2005). Offshore Outsourcing - A Global Shift in the Present IT Industry, in: Inter Economics, Volume 40, Number 2, March, S. 100 – 112.
8. Gereffi, Gary, and Vivek Wadhwa. (2006). Framing the Engineering Outsourcing Debate: Placing the United States on a Level Playing Field with India and China.
9. L. Friedman, Thomas. (2005). The World is Flat: A Brief History of the Twenty-First Century, ISBN 0-374-29288-4
10. Hira, Ron, and Anirl Hira. (2005). Outsourcing America, What's Behind our National Crisis and How we can Reclaim American Jobs, ISBN 0-8144-0868-0.
11. Kobayashi, Mark, Hillary. (2004). Outsourcing to India, 2nd ed, ISBN 3-540-23943-X.
12. Lazonick, William. Globalization of the ICT Labor Force, in: The Oxford Handbook on ICTs, eds. Claudio Ciborra, Robin Mansell.

*****

Editor-In-Chief
Pezzottaite Journals,
24, Saraswati Lane, Bohri, Near Modern Dewan Beverages,
Jammu Tawi – 180002, Jammu and Kashmir, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

NEED FOR AN OFAC LIKE DATABASE IN INDIA

S. Anand[22] Kavitha Subramanian[23]

ABSTRACT

During the past few years, the financial sector, had witnessed an increasing trend in the non-payment of dues by its customers who borrowed money under various schemes. These non-payment of dues resulted in an increase in the NPAs reported in the past few years. Not only banks faced this issue, the NBFCs, housing loan corporations, co-operative credit societies, indigenous bankers, pawn brokers and even the common man. It's very difficult to believe a person and lend money or get involved in any transactions which have a financial impact.

A person who is a known fraud in one area is not known by many in another area. A noted criminal in one Police Station is not known as a criminal in another Police Station unless the kind of crime he committed is too big or publicized by media.

There are few people in the society who earn their daily bread by mere cheating. They cheat people in one place and abscond to another place and earn their living by cheating. Given this situation, the common man becomes the easiest victim as he doesn't know the background of others and there is no source for him to check the credit worthiness of others. Just by mere acquaintance or friendship, he enters into financial transactions with others and ends up losing their hard earned money.

The main object of this research is to find an apt solution to tackle this problem.

KEYWORDS

OFAC, NPA, CIBIL, CIR, CIC, Credit Check, Financial Frauds, Mens Rea, AML, UID, and SSN etc.

NEED FOR THIS RESEARCH

Trustworthiness is the heart of any interpersonal relationship. In fact, it is of prime importance when it comes to building a business relationship like lender-borrower, owner-tenant, buyer-seller, customer-owner, client-management, employer-employee, doctor-patient, etc. Even though trustworthiness is so important, it is the most difficult thing to establish and prove. Future is so uncertain that a person who is trustworthy today may turn untrustworthy very easily and the vice versa too might happen.

However, due care should be taken to analyze a person's past to find out his trustworthiness before entering into any financial transaction as we cannot fall into a pit unknowingly. This analysis will help to reduce the percentage/probability of getting cheated at a later stage. Once a customer becomes a defaulter, the organization have to incur heavy cost to recover the money and it need to invest certain amount of time too. As we all know, prevention is better than cure, if we don't get involved in monetary transactions with untrustworthy persons, we can save lot of time, energy and of course money too.

LITERATURE REVIEW

Since this is a novel topic not many researchers have conducted study on this topic. However, Dr. A. Shyamala (2012) in her research paper "NPA's in Indian banking sector: Impact on profitability" had observed that there is an increase in advances over the period of the study. However, the decline in ratio of NPAs indicates improvement. Though there is a decline in ratio, the NPAs are serious problem in the Indian banking sector and needs high focus in further reducing the NPAs.

Wong Sow Wei (2009) in his study "US: tell us who your clients are" had revealed that all securities and futures firms such as investment advisers, broker-dealers, futures commission merchants introducing brokers in the US (including their overseas subsidiaries and branches) must now establish and maintain an OFAC compliance programme.

Although targeted at its domestic industry, these guidelines threaten to have far-reaching extra-territorial ramifications, extending to all foreign counterparties that deal with US capital markets. Foreign counterparties will now be indirectly subject to US regulations and disclosure obligations, which may cause them to be in breach of their own domestic laws on privacy and banking secrecy.

OBJECTIVES OF STUDY

1. To analyze the impact of OFAC in eradicating funding to terrorism and how it helps the society in general.
2. To analyze the impact of CIBIL in preventing/reducing the NPAs of banks and how it helps the society in general.
3. To analyze the need for an open access database which helps the society to escape from the clutches of wrong-doers, frauds and terrorists etc.

[22]Research Scholar, J. J. College of Arts & Science, India, ansu.hp@gmail.com
[23]Guide, Karpaga Vinayaga College of Engineering &Technology Tamil Nadu, India, sk@kvim.ac.in

METHODOLOGY

This study is more theoretical in nature. However, the present study uses the most recent available published secondary data compiled from the Statistical Tables Relating to Banks of India from the RBI website and other related information from the OFAC website and CIBIL website.

OFAC – ITS USES AND DRAWBACKS

The Office of Foreign Assets Control (OFAC) of the US Department of the Treasury administers and enforces economic and trade sanctions based on US foreign policy and national security goals against targeted foreign countries and regimes, terrorists, international narcotics traffickers, those engaged in activities related to the proliferation of weapons of mass destruction, and other threats to the national security, foreign policy or economy of the United States.

OFAC acts under presidential national emergency powers, as well as authority granted by specific legislation to impose controls on transactions and freeze assets under U.S. jurisdiction. Many of the sanctions are based on United Nations and other international mandates, are multilateral in scope, and involve close cooperation with allied governments.[1]

OFAC maintains a database which contains all the details about terrorists and their organizations that were declared as terrorists by US. The US Dept of Treasury periodically updates the information based on the recent changes. This database is open to all and anyone can perform a search in this database through internet. Below is an example for searching the name "Dawood" in OFAC[2].

As we see in the below screenshot, the database search provides all the information relating to that person like alternate names used, addresses in which he resides and his various passport #s issued by various Governments and their date of issuance. It is mandatory for all the US based banks to perform a check in this database before approving any financial transactions done through their bank. This check will ensure that the concerned bank is not used for transferring funds to any terrorist organizations.

Most of the US based companies have this search as a part of their on boarding procedure while recruiting an employee / subcontractor. By doing this check, companies can ensure they don't provide employment to terrorists, which is an indirect method to fund terrorist organizations and their activities. Most of the US based companies, before adding someone as their vendor in their database; they perform an OFAC check to ensure they don't handover any contract/purchase order to terrorists.

Figure-1

Score : **100.00**	SDN Number: **9758**
Name: **IBRAHIM, Dawood**	
Aliases: **AKA: EBRAHIM, Dawood AKA: HASSAN, Dawood AKA: IBRAHIM, Dawood Sheik AKA: KASKAR, Dawood Ibrahim AKA: SABRI, Dawood AKA: SAHEB, Amir AKA: SETH, Iqbal AKA: REHMAN, Shaikh Ismail Abdul AKA: AZIZ, Abdul Hamid Abdul AKA: DILIP, Aziz AKA: ANIS, Ibrahim Shaikh Mohd AKA: HASAN, Shaikh Daud AKA: IBRAHIM, Anis**	
Address: **ADDRESS: 617 CP Berar Society, Block 7-8 CITY: Karachi COUNTRY: Pakistan ADDRESS: House No. 37, Street 30, Phase V, Defence Housing Authority CITY: Karachi COUNTRY: Pakistan ADDRESS: White House, Al-Wassal Road, Jumeira CITY: Dubai COUNTRY: United Arab Emirates ADDRESS: 33-36, Pakmodiya Street, Haji Musafirkhana, Dongri CITY: Bombay COUNTRY: India ADDRESS: House No. 10, Hill Top Arcade, Defence Housing Authority CITY: Karachi COUNTRY: Pakistan ADDRESS: Moin Palace, 2nd Floor, Opp. Abdullah Shah Gazi Dargah, Clifton CITY: Karachi COUNTRY: Pakistan**	
Remarks: **DOB 26 Dec 1955; alt. DOB 31 Dec 1955; POB Ratnagiri, Maharashtra, India; nationality India; citizen India; alt. citizen Pakistan; alt. citizen United Arab Emirates; Passport M-110522 (India) issued 13 Nov 1978; alt. Passport R-841697 (India) issued 26 Nov 1981; alt. Passport A-333602 (India) issued 04 Jun 1985; alt. Passport A-501801 (India) issued 26 Jul 1985; alt. Passport P-537849 (India) issued 30 Jul 1979; alt. Passport K-560098 (India) issued 30 Jul 1975; alt. Passport V-57865 (India) issued 03 Oct 1983; alt. Passport G-866537 (Pakistan) issued 12 Aug 1991; alt. Passport G-869537 (Pakistan); alt. Passport F-823692 (Yemen) issued 02 Sep 1989; alt. Passport A-717288 (United Arab Emirates) issued 18 Aug 1985.**	

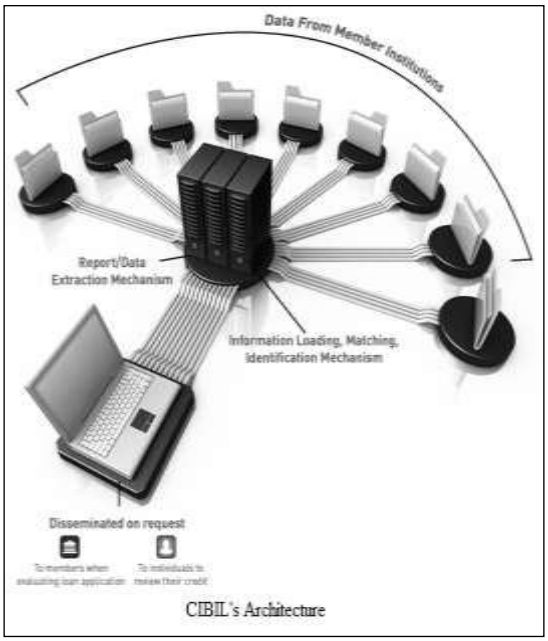
The main drawback in OFAC database is it is mandatory only for the US based companies and whoever have transactions between US based companies. It is not mandatory to use this database for the companies in other part of the world. Hardly a few countries have an efficient database like OFAC to counter anti-money laundering (AML) and funding to terrorism.

Also, this database doesn't contain the details about the common people who have committed financial fraud and other crimes. Hence, this database is helpful only to the big companies / banks to prevent money flowing into terrorist organizations and this is not of much help to a common man in his day-to-day life.

CIBIL – ITS USES AND DRAWBACKS

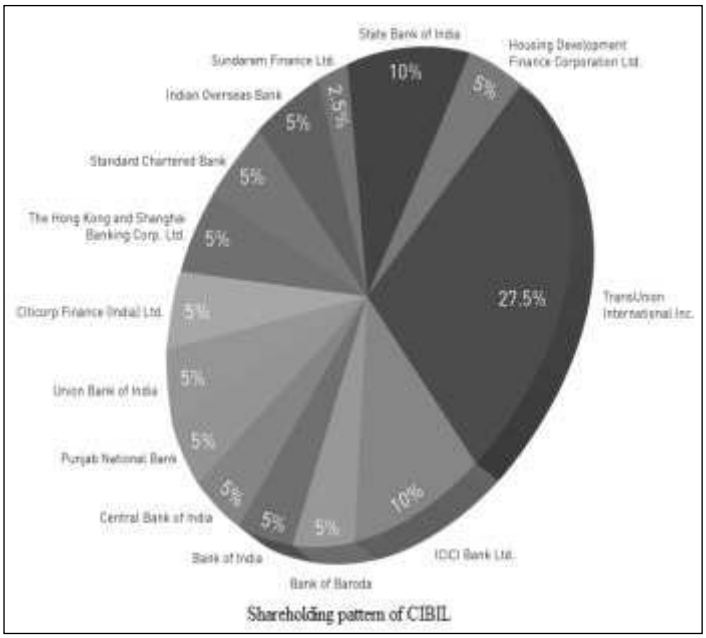
Credit Information Bureau (India) Limited or CIBIL is a Credit Information Company (CIC) founded in August 2000. It plays a critical role in India's financial system. Whether it is to help loan providers manage their business or help consumers secure credit faster and at better terms, the use of CIBIL's products have led to a massive change in the way the credit life cycle is managed by both loan providers and consumers[3].

Figure-2



CIBIL's Architecture

Graph-1



Shareholding pattern of CIBIL

CIBIL collects and maintains records of an individual's payments pertaining to loans and credit cards. These records are submitted to CIBIL by its member institutions, on a monthly basis. This information is then used to create Credit Information Reports (CIR) and credit scores which are provided to lenders in order to help evaluate and approve loan applications. To some extent, this helps the members of CIBIL to evaluate the credit worthiness of its customers who are seeking a loan.

Some people unofficially use this database for matrimonial purposes too. Before getting married, they check the credit status of bride/bridegroom using this database. When we compare the NPA as a % of the loans & advances disbursed by the banks/members of CIBIL, we can see a good trend in the reduction of percentage. However, CIBILs members couldn't wipe off the NPAs or if we look at the amount of NPA without calculating it as a % of loans & advances, the NPA figure is still alarming and it explains a need to improve the present system.

Not all the banks are members of CIBIL and not all the banks share their data with CIBIL. If a person has obtained a loan from a non-member of CIBIL or from a small money lender or from any person in his acquaintance and cheated them by not repaying the money, it will never be reflected in CIBIL's database and CIBIL's members will never come to know about these defaulted payments and defaulters.

Even though all banks have lot of people working in their credit department to check the complete credit history of a customer before disbursing a loan, it is quite evident from the below table[4] that there is a huge amount under NPA. This shows that the existing processes followed by the banks are not so efficient to stop/reduce the NPAs. Hence there is a need for creating a much better database than CIBIL which can be accessed by all for the benefit of general public.

Table-1

Non-Performing Assets - Sector-wise								
(As at end-March 2011)								
							(Amount in Rs. crore)	
Sr. No.	Name of the Bank	Priority Sector NPAs	Of which, Agriculture	Of which, Micro and Small Enterprises	Of which, Others	Non-Priority Sector NPAs	Of which,Public Sector NPAs	Total NPAs
I	**Public Sector Banks**	**41245**	**14487**	**14340**	**12417**	**29803**	**278**	**71047**
	- Nationalised Banks	25678	9220	10424	6034	17229	273	42907
	- State Bank Group	15567	5268	3916	6383	12573	6	28140
II	**Private Sector Banks**	**4823**	**2172**	**1298**	**1353**	**13147**	**153**	**17971**
	- Old Private Sector Banks	1599	417	551	631	2094	153	3694
	- New Private Sector Banks	3224	1755	746	722	11053	0	14277
III	**Foreign Banks**	**1141**	**0.1**	**352**	**789**	**3924**	**0.0**	**5065**
	Total	**47209**	**16660**	**15990**	**14559**	**46874**	**431**	**94083**
Non-Performing Assets - Top 5 banks								
Sr. No.	Name of the Bank	Priority Sector NPAs	Of which, Agriculture	Of which, Micro and Small Enterprises	Of which, Others	Non-Priority Sector NPAs	Of which,Public Sector NPAs	Total NPAs
1	State Bank of India	13275	4518	3138	5618	9799	6	23074
2	ICICI Bank Ltd.	1808	1116	89	603	8008	-	9816
3	Punjab National Bank	2742	1171	1349	222	1637	4	4379
4	Bank of India	2939	898	1645	396	1418	14	4357
5	Union Bank of India	2262	856	946	460	1361	1	3623
	Total	**23025**	**8559**	**7167**	**7299**	**22223**	**25**	**45248**
	As a % to total NPA	**48.77%**	**51.38%**	**44.82%**	**50.13%**	**47.41%**	**5.76%**	**48.09%**

For a common man, he cannot check another persons' credit worthiness in CIBIL. In contrary, he can just extract his creditworthiness by paying some money. Also, neither he can become CIBILs member nor he can get access to its database. Only if CIBILs database is opened to the general public, it can be used to its fullest extent.

FINDINGS & CONCLUSIONS

- The existing databases which are available now to check the credit worthiness of a person are not very efficient and not all the sections of the society are benefitted by them.
- There is a need to improve these databases and make them accessible by all the sections of the society.
- There should be a clear process to make additions, updates or deletions on these databases and these changes need to be reflected on the database as & when it occurs.

RECOMMENDATIONS

- At present, lot of data is collected by Government of India and the data is available in bits and pieces here and there.
- Without reinventing the wheel once again, by just connecting all the databases maintained by the Government of India and creating a centralized database which can be openly accessed by public will help the entire society a lot.
- Like Social Security Number (SSN #) in US, India came up with a good idea of issuing AADHAAR card to all its citizens and providing them a Unique Identity Number (UID No.). However, due to various issues, this effort is not yet so fruitful in India and even many Government organizations refuse to consider AADHAAR card as a proof of identity.
- Government of India should fine tune its UID idea and ensure it becomes a rich database with vast information which can be used for the benefit of public.
- The UID database should be linked to all the other databases like CIBIL, crime database (if any maintained by Police department), judiciary database (which contains the details about cases filed and their judgment) and health database (if any database maintained by Ministry of Health) and other related databases which can help the public in general.

- Only if all these data are linked and pooled less than one umbrella, it will be meaningful and it not only provides meaningful information to the Government but also to the public.

- By providing an open access to such database (some data may be hidden or explained in a general statement), it will benefit the larger section of the society and it will prevent the wrong-doers from further increasing their crime rate.

- There are lots of people in this world who are habitual offenders. They possess mens rea (guilty mind) which is one of the necessary elements of a crime. Actus non facit reum nisi mens sit rea[5], which means "the act does not make a person guilty unless the mind is also guilty". As a general rule, criminal liability does not attach to a person who acted with the absence of mental fault. Hence, there is a need to arrest the further wrong doing of these guilty people and for this purpose the newly recommended database will help everyone to stay away from these habitual offenders.

SCOPE FOR FURTHER STUDY

- Each of these databases can be further studied in detail. In-depth analysis can be made to understand their impact on the society.

- NPAs of different banks can be further studied to understand how each bank is performing when compared to the advances made by them.

REFERENCES

1. Information extracted from the website http://www.treasury.gov/about/organizational-structure/offices/Pages/Office-of-Foreign-Assets-Control.aspx on 15-Aug-12.

2. OFAC database search - http://www.instantofac.com/search.php on 15-Aug-2012.

3. Information extracted from the website http://www.cibil.com/about-us on 17-Aug-2012.
    a. Both the diagrams are extracted from Cibil's website on 17-Aug-2012.

4. Information extracted from the website of RBI http://www.rbi.org.in/scripts/AnnualPublications.aspx?head=Trend%20and%20Progress%20of%20Banking%20in%20India on 10-Sep-2012.

5. http://en.wikipedia.org/wiki/Mens_rea referred on 23rd Aug 2012.

6. Shyamala, A. (2012). "NPA's in Indian Banking Sector: Impact on Profitability", Indian Streams Research Journal Vol.1, Issue. V/June; 12, pp.1-4.

7. Wong Sow Wei. (2009). "US: tell us who your Clients are", International Financial Law Review, pp 49-51.

8. Fitzgerald, Peter L. (2001). "Drug Kingpins and Blacklists: Compliance Issues with US Economic Sanctions", Journal of Money Laundering Control, Vol. 4, No.4, pp. 360-383.

9. http://en.wikipedia.org/wiki/Unique_Identification_Authority_of_India referred on 23rd Aug 2012.

10. http://uidai.gov.in/ referred on 23rd Aug 2012.

11. http://courtnic.nic.in/courtnic_chennai/default.aspx referred on 23rd Aug 2012.

*****

FOR ANY CLARIFICATION OR SUGGESTION, WRITE US:

Editor-In-Chief
Pezzottaite Journals,
24, Saraswati Lane, Bohri, Near Modern Dewan Beverages,
Jammu Tawi – 180002, Jammu and Kashmir, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net
contactus@pezzottaitejournals.net

M-COMMERCE IN INDIA: EMERGING PERSPECTIVE

N. Muthu[24] S. Muthu Kumar[25]

ABSTRACT

Organizations wishing to attend to m-commerce should start at the beginning when finding proper m-commerce services either for a work-related solution or individual customer-related solutions. The technological digital divide can be recognized while innovators and early adapters are compared with laggards who adopt technology last.

An initial enterprise architecture framework for mobile commerce that aims to provide practitioners and researchers a platform for considering the development of m-commerce systems, and one which aims to influence both philosophical and practical approaches to building m-commerce systems. What are the critical business success factors in a Mobile Commerce implementation and how does an organization use these guidelines as a framework to ensure a successful implementation of the technology in their business?

As m-commerce applications and wireless devices are evolving rapidly, one will take forward the other one towards empowering innovation, versatility and power in them. M-commerce is generally referred to as all transactions that are conducted via a mobile phone.

Effectively, it is the wireless equivalent of the fixed Internet E-commerce. When there is increase in network reliability and redundancy, improve security Mobile commerce is very effective.

M-commerce schemes such as these may have the greatest impact in countries such as India, where the great majority of the population lacks access to financial services, rather than in the developed world where bank accounts, ATMs, credit cards, and debit cards are pervasive.

KEYWORDS

M-Commerce, Revolution, Business Application, and Perspective etc.

INTRODUCTION

"It's all about communication and trust relationships."- Vesku Paananen

M-commerce is a discipline that involves mobile device, wireless networks and Internet technologies and conducting different types of business transactions. Example: Mobile banking or M-banking or mobile E-banking, is considered to be the latest gateway banking that provides a platform for carrying out banking transactions using mobile telecommunication devices. "The e-commerce is simply the buying and selling of products and services over the Web.

The larger concept – e-business – represents all the technological applications and business processes that enable a company to service an e-commerce transaction" Electronic commerce, combined with mobile commerce, is likely to become a major business phenomenon across the globe in the near future. India is currently in the midst of an e-commerce and m-commerce revolution.

The Internet has enabled manufacturers, retailers, wholesalers and suppliers to communicate and transact their business better, faster and cheaper in a wide-range of markets. It has empowered the consumers by giving them access at anytime and a wider choice of products and services than before. Undoubtedly, both e-commerce and m-commerce are at a nascent stage in India but these have huge growth prospects in the country.

The Information Technology Act, 2000 makes e-commerce, online transactions, and digital signatures legally binding in India. This article probes into various aspects of this revolution.

"M-commerce is defined as any transaction with a monetary value
– either direct or indirect –
that is conducted over a wireless telecommunication network"

(Barnes 2002b: 92)

[24]Professor, Saveetha Engineering College, Tamil Nadu, India, profdrmuthu@gmail.com
[25]Research Scholar, St Peters University, Tamil Nadu, India, nehalmuthu@yahoo.co.in

M-COMMERCE APPLICATIONS AND SERVICES

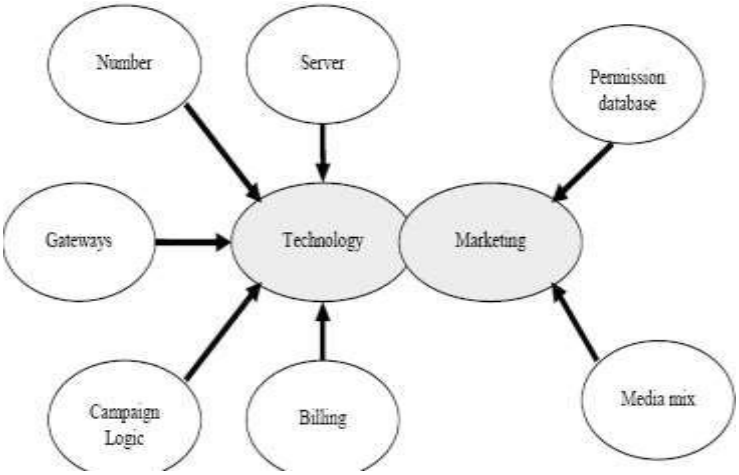
Figure-1

S.L	M-Commerce Applications	M-Commerce Services
1	Mobile Banking (M-Banking)	Mobile Accounting , Mobile Brokerage Mobile Financial Information
2	Mobile Entertainment (M-Entertainment)	Mobile Gaming, Downloads (music and ring tones) Downloads (video and digital images) Location-based Entertainment Service
3	Mobile Information Services	Current Affairs, Travel Information & Tracking Services, Mobile Search Engines and Directives Mobile Offices
4	Mobile Marketing (M-Marketing)	Mobile Couponing, Direct Marketing , Mobile Newsletters, Organization of Mobile Events
5	Mobile Shopping (M-Shopping)	Mobile Purchasing of goods
6	Mobile Ticketing (M-Ticketing)	Public Transport, Sport and Cultural Events, Air and Rail Ticketing, Mobile Parking
7	Mobile Health (M-Health)	M-Diagnosis, M-Prescription, M-Referencing M-Appointment
8	Mobile Payment (M-Payment)	M-Purse, M-wallet, Micro payment & Macro payment
9	Telematics Services	Remote Diagnosis and maintenance of Vehicles, Navigation Services, Vehicle Tracking and Theft Protection, Emergency Services

Technological advancements has lead to the emergence of new usage scenarios and the corresponding applications and services deployed in the field enabling employees to remain in touch through email, interact with colleagues at the office, and access critical company database even while on the move. Major enterprise solution vendors such as SAP, Oracle, Siebel, IBM, and Sybase shall be accessed from mobile locations.

Example of mobile enterprise applications: Mobile Enterprise Resource Planning (m-ERP) and mobile Supply Chain Management (m-SCM), Mobile Customer Relationship Management (m-CRM),Mobile Health Care, Mobile Telemetry, Mobile fleet tracking and dispatching. Many of above scenarios empower employees through mobile access to new or existing enterprise applications. They do not really qualify as m-commerce services as they do not directly entail transactions between a services provider and a customer.

Figure-2: Integration of Business Viability - Issues Involved

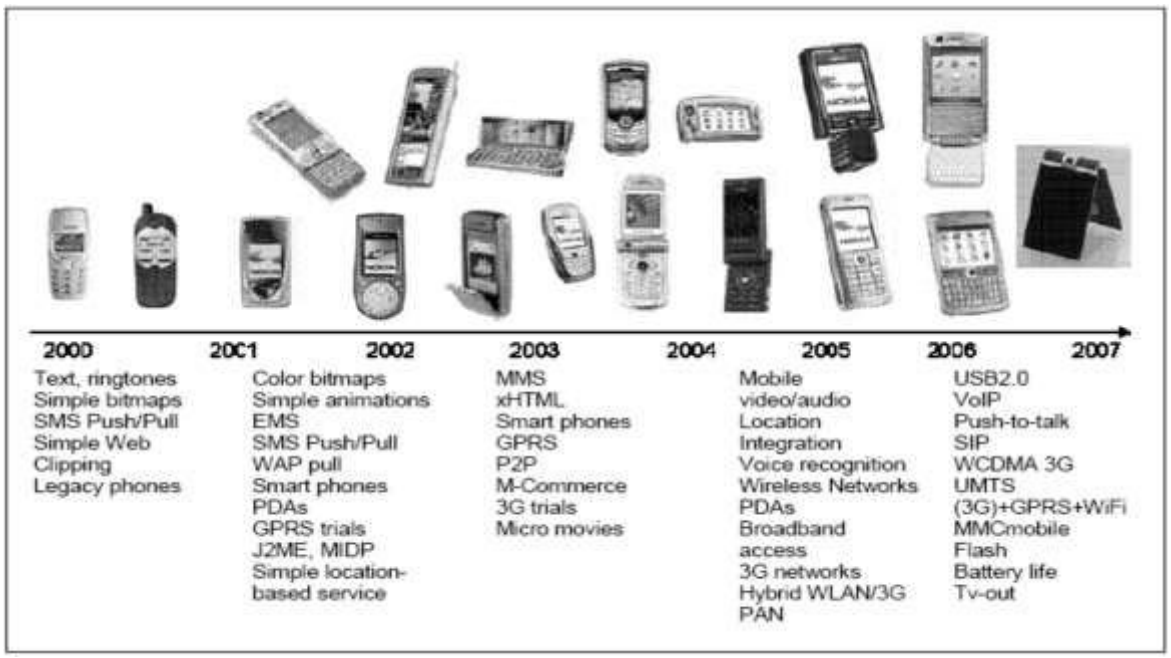


Development of mobile technology, creation of m-trust and keeping up m-habits, are crucial issues for creation of the new digital market and one organization is not likely to have different aspects. The way business is being done itself have undergone a transformation. The content and services offered by traditional provider are on the way towards m-commerce.

Figure-3: Evolution of M-Commerce

Source: Value exchange between product or service provider and customer. (Allee, 2000).

Figure-4: Evolution of M-Commerce



The e-commerce is changing economy and affecting all aspects of business globally. Today, no company can afford to ignore e-commerce. It is even predicted that e-commerce will become part of the 'core' business functions just like accounting, marketing, etc. India is currently in the midst of an e-commerce and m-commerce revolution. The arrival of the Internet, followed by the escalating growth of Web-based businesses is leading to e-commerce both on the B2B and the B2C sides.

The e-commerce trends in India are in perfect accordance with the sweeping changes taking place in the global markets. Even the government has taken significant strides to ensure that the economic climate is ripe for e-business.

As per a Nasscom-McKinsey study, "India has the potential to earn revenues worth US $100 billion by 2008 from e business solutions (both domestic and export markets put together)." The projections of revenues from Internet and e-commerce related software and services exports were 1,200, 1,800, 2,300, and 3,000 million US Dollars during 2000-01, 2001-02, 2002-03 and 2003-04, respectively. Internet-based e-business is only in its infancy in India. As organizations become more adept at e-commerce, and as consumers become more used to conducting commerce over the Internet, e-business will continue to grow rapidly.

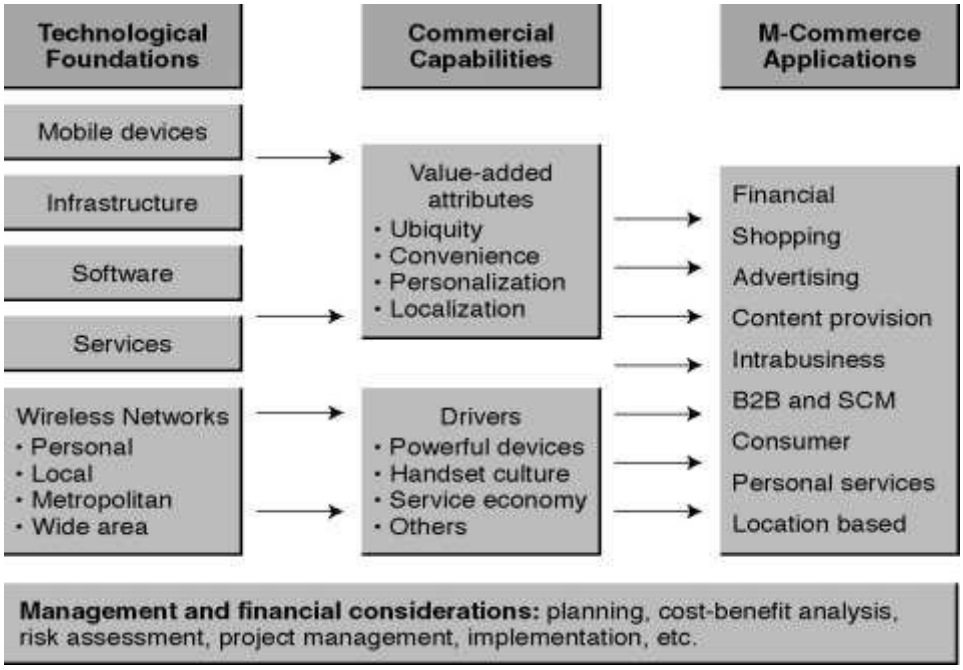
M-commerce, however, was born due to new technological advances, such as, GSM networks, WAP protocols, and 3G technologies. By using 'innovative' technologies, mobile operators have promised to consumers more effective ways of communicating and transacting their business. The vision of m-transaction business remotely. Mobile commerce is considered to be an extension of E-Commerce that provides user to interact using the wireless platform anytime & anywhere. It was found out that all banks in Nigeria offer e-banking and around 52% of them also offer some form of M-banking services Charles et al., (2007). The potential is great for M-commerce

The Internet has enabled new ways to do business through the opportunity of universal information distribution (Levy, 2000). The third generation wireless networks provide new business opportunities and new market segments to the existing and traditional telecommunication market (UMTS- forum, 2000). Mobile Internet market is merging from the Internet and mobile communications market. The firms operating in this highly competitive global environment seek continuously new business opportunities. This is caused by the fast development of a relatively young industry and the convergence of industries. These reasons enable new opportunities and market for companies that are originally from different industry. (Pynnönen et al., 2004) but due to lack of infrastructure support the implementation is not smooth. Coursaris & Khaled (2003) studied M-Commerce in Canada focusing on the issue of wireless privacy.

An analysis of the Canadian Mobile market has been done with respect to both E-Commerce and M-Commerce followed by discussion of the needs and concerns of Mobile customers. The study is focusing on the privacy concern which arises because of the wireless interaction between the two parties and presents a framework for this. Also the responsibilities of the interacting parties for increasing the privacy have been highlighted.

Tiwari, Buse, and Herstatt (2007), in their study titled, "Mobile Services in Banking Sector: The Role of Innovative Business in Generating Competitive Advantages" have empirically assessed the customer acceptance of the M-Commerce in Germany. The study found that the highest users of mobiles are the top management of the corporate, self employed, salaried persons, students and others. It was found that Government employees were found not supporting mobile banking. Some of the reasons that came in favor of mobile banking is its ubiquity, overview of bank account and immediacy. However the concerns of the users were mainly regarding the insecurity and high cost.

Figure-5: The Mobile Commerce Landscape



Adoption of Mobile phones in India with more than 800 million subscribers and the introduction of smart phones with 3G enabled services have opened up avenues in mobile advertising, mobile application development and mobile commerce. According to BuzzCity's latest report, India is top performing mobile advertising region in Asia.

The growth in mobile advertising globally is tremendous with ads served on a year-on-year growth of 139%. With respect to some number crunching, more than 126 billion ads were served in 2011, compared with 52 billion in 2010. Being personalized addressing it is considered to be more effective in reaching the masses at lowest possible cost.

TYPES OF BARRIERS INCULCATION

The following are the key barriers. They are: a) Concerns about security b) Heterogeneous environment c) Imbalance between service providers and network operators d) Lack of a simple, standardized payment mechanism e) Lack of awareness and f) Lack of high speed connections.

M-COMMERCE CHALLENGES

An effective Web site should be easy to use, accomplish the goals of the company, be safe and secure, and be affordable to set up and maintain Successful implementation of e-business requires significant changes to existing business processes and substantial investment in IS technology.

- The influence of e-Commerce and the Internet medium has meant a shift in the business focus from the product to the customer (Hagel and Armstrong, 1997).

- A business leveraging the benefits of e-Commerce must align itself with the customer, identifying quality, price, and delivery of the product or service as key drivers (PricewaterhouseCoopers, 1999).

- Consequently, e-Commerce is not just about the transaction, it is about focusing on the customer and maximizing the value proposition through proactive relationship management (Lawrence, Corb itt, et al, 2000).

- M-Commerce extends this relationship management paradigm to the next level. The technology enables businesses to not only adapt (or personalize) information specifically for the customer, it allows for location aware, anytime/anywhere access to the customer. Similarly, the customer using an m-Commerce device may access virtually any information on a private or public network, at anytime and at any location. Corporations realize that the next wave of relationship management innovation requires business integration of processes, applications and systems on a new and grander scale. The American-based company AMS believes that understanding the customer is so important to their m-Commerce initiative that they have created a "blueprint for success" with the customer positioned at the core of the framework. AMS believe that "While the success drivers of the future are clearly business-oriented, the real key to m-Commerce profitability is customer understanding." (AMS, 2001).

- There is no doubt that m-Commerce is set to dramatically alter the way businesses interact with customers and with this comes unique challenges. Issues of security, ubiquity, usability, legality and trust will all be prevalent in the growth and wide-spread adoption of m-Commerce (Andreou et al, 2002).

- Furthermore, integrating m-Commerce is certainly not a trivial task and one that should be taken seriously by the organization. So, what is involved in overcoming these challenges? What are the ways in which a company can address the challenges of m-Commerce and be successful? What are the critical success factors in integrating m-Commerce in an organization?

M-COMMERCE IN INDIA: EMERGING PERSPECTIVE

M-commerce has become an integral part of our daily business life. There are websites providing any number of goods and services. Example: 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:

- Automobiles,
- Employment and e-commerce,
- Gifts and e-commerce,
- Hobbies and e-commerce,
- Matrimony and E- commerce,
- Real estate and e-commerce,
- Stocks and shares and e-commerce,
- Travel & tourism and e-commerce.

MOBILE COMMERCE AND ITS FUTURE

Mobile communications and the Internet are expected to be the main drivers of the industry, and they have a high influence in changing the face of future business. New technologies are emerging and enable novel kinds of value-added services over wireless broadband connections. The evolving technologies of mobile telephony promise outstanding opportunities to Mobile Operators, Value Added Service Providers and Mobile Device Vendors as well as every business already in e-commerce or just examining the options of entering this market.

Today, according to Kanwalinder Singh, President of Qualcomm India and SAARC, m-commerce in India is limited largely to SMS-based communications between bank account holders and their banks for purposes such as checking one's account balance. In fact, under current regulation, any type of m-commerce, including money transfer schemes such as M-PESA, must involve a bank.

CLOSING THOUGHT

Mobile technology is continuing to play a significant role in providing efficient and effective means for organizations to broaden their revenue streams, and enhancing competitive positioning. There is no doubt that the mobile ecosystem creates many possibilities for the development of innovative solutions that create real value for end users whilst meeting real financial imperatives of service providers and stakeholders in the m-commerce supply chain. However, the mobile ecosystem is potentially complex and the universe of discourse created contains many interrelated components that span across financial, organizational, technological, and social boundaries.

It is this that provides the impetus and rationale to focus on adopting an enterprise architecture framework approach to govern the development of m-commerce systems and with a view to reducing complexity. It is also this that aims to enable organizations to adapt rapidly to mobile technologies, reap the affordances created through technology adoption, remain competitive – yet through a structured and framework-oriented approach that provides a baseline for pro-active transformation rather than a re-active and potentially chaotic and fragmented approach.

Further research could be conducted to investigate if customized model can be effective in enhancing customer loyalty in other kind of businesses. Then, it is possible to provide a general-purpose model for m-commerce that brings efficiency in customer relationship management in each enterprise. In addition, the privacy should be investigated in the m-commerce solution that is a critical issue for customers.

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.

"Mobile commerce barely survived the Internet bubble. But some emerging 'niche' applications could add up to something big. Since there is no 'single' killer application, vendors must support a range of applications." So, we predict that m-commerce will not live up to its promise until a commercially successful killer-application emerges. What will that killer application be? Only time will tell, we certainly do not know.

*****

FLEXIBLE DATA ACQUISITION FOR ENERGY MONITORING AND CONTROLLING

C. S. Satheesh Kumar[26] B. Sasikumar[27] T. Sathish Raja[28]

ABSTRACT

A Supervisory Control and Data Acquisition (SCADA) based system for monitoring and control of the energy supply and the peak load in industry plant has been designed and algorithm for short-term energy forecast was implemented. The paper describes design and implementation of Energy Management System (EMS) consisted of cost effective elements combined with SCADA software application, which makes platform for supporting the economical energy management of industrial businesses. Trend SCADA screen with necessary on-line data for operator peak load limiting action was designed and real time data for control automatic power limiting system was prepared.

KEYWORDS

Data, Energy, EMS, SCADA, and Energy Monitoring etc.

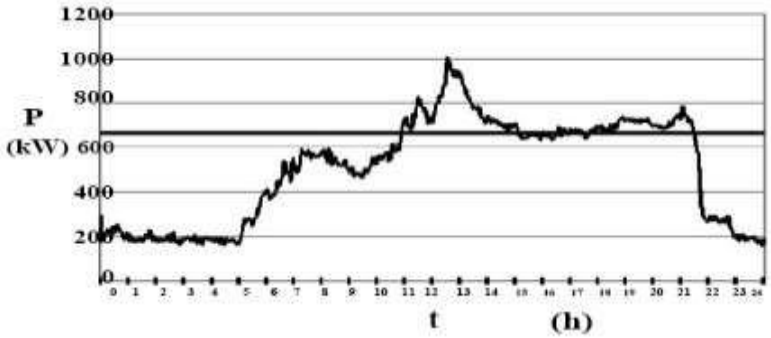
INTRODUCTION

We have been taking various steps and measures for saving energy right from the day human being started using energy. But the efforts were kneejerk reactions to circumstantial compulsions without any significant impact on long term consumption. However with any scarcity and security beginning to be the key issues, systematic methodology was evolved to conserve energy on sustainable basis and also adopt renewable energy sources.

Competition in the industry leads to increased cost pressure, which forces companies to implement rationalization measures also with regard to energy supply and consumption. By monitoring and control of the energy supply and the peak load, costs can be reduced and own power production can be optimized. In today deregulated energy market environment monitoring also makes it possible optimal energy supply contracting.

In the electricity sector, normally a rate is used that covers both the investments made by the suppliers (building costs for power plants and the supply system) as well as the arising costs for energy generation (primarily fuel costs). The price has an energy and power output portion. Rational energy usage is based on energy and power measurement data collection, analysis and real time forecast of average output of a measuring period to recognize in a timely manner when the fixed imported power limit is going to be exceeded and correspondingly intervene. Figure1 indicates "blind" power consumption one industry consumer without knowledge about load profile. Peaks can rise up to 150% of rational and necessary load.

Figure-1: Power Load Profile without Monitoring



This project discusses systematic and scientific methods for conservation of energy of any facility; be it an industry, commercial premises, shops & malls, office, or even a small house. It also suggests effective monitoring and control mechanism for sustainability of the savings and opportunities for further improvements in continuous basis.

START PIONTS

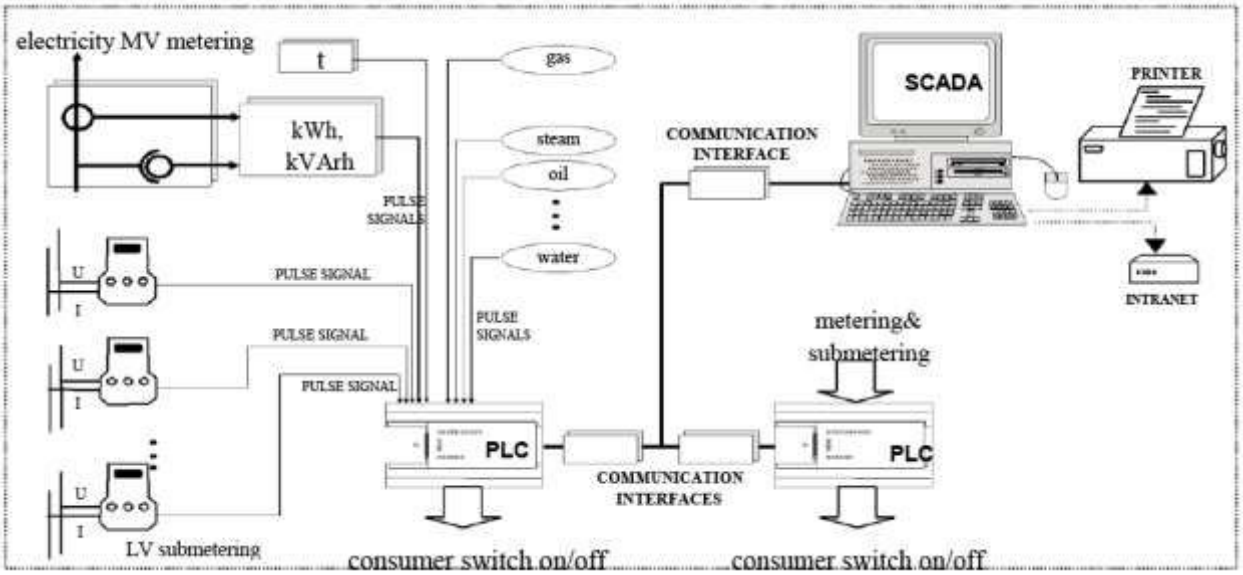
When started with design of the energy supply monitoring system, following start points were considered:

- Identify the quality and cost of various energy inputs,
- Assessing present pattern of energy consumption in different cost centers of operations.
- Relating energy inputs and production output.
- Identifying potential areas of thermal and electrical energy economy.

[26]Student, BE-EEE, Karpaga Vinayaga College of Engineering & Technology, Tamil Nadu, India, satheeshkumar92@gmail.com
[27]Student, BE-EEE, Karpaga Vinayaga College of Engineering & Technology, Tamil Nadu, India.
[28]Student, BE-EEE, Karpaga Vinayaga College of Engineering & Technology, Tamil Nadu, India.

- Standard, modular and ecpandable design to be used worth possibility of connecting with business computer network.
- Necessity of synchronization with official accounting meters intervals and tariff periods.
- Sub metering data are also to be concerned.
- Highlighting wastages in major areas,
- Recommend appropriate energy conversation, operation, and maintenance procedures,
- Mote current and potential health and safety problems and how they may be affected by proposed changes,
- Implementation of measures for energy conservation and realization of savings.

Figure-2: PC SCADA System with Pulse Output Energy Meters Connected



METHODOLOGY

A Supervisory Control and Data Acquisition (SCADA) based system for monitoring and control of the energy supply and the peak load has been designed and algorithm for short-term energy forecast was implemented. The project describes design and implementation of Energy Management System (EMS) consisted of cost effective elements combined with SCADA software application, which makes platform for supporting the economical energy management. SCADA screen with necessary on-line data for operator peak load limiting action was designed and real time data for control automatic power limiting system was prepared.

MONITORING SYSTEM DESIGN

Optimal solution founded based on stated tasks is shown in Figure-2. System consists of main and sub metering energy meters with pulse output connected to Programmable Logics: Controllers (PLC) and via communication system connected with PC computer with SCADA application. System is open for different media metering data acquisition. Each meter, Pulse indicates flow of one unit of energy. PLC calculates electrical power from energy in every 20 seconds. Taking into account worst case of low pulse frequency from official meter regarding counting error, and necessary speed of switching reaction, 20 seconds intervals for power counting was a good compromise.

Figure-3: Daily

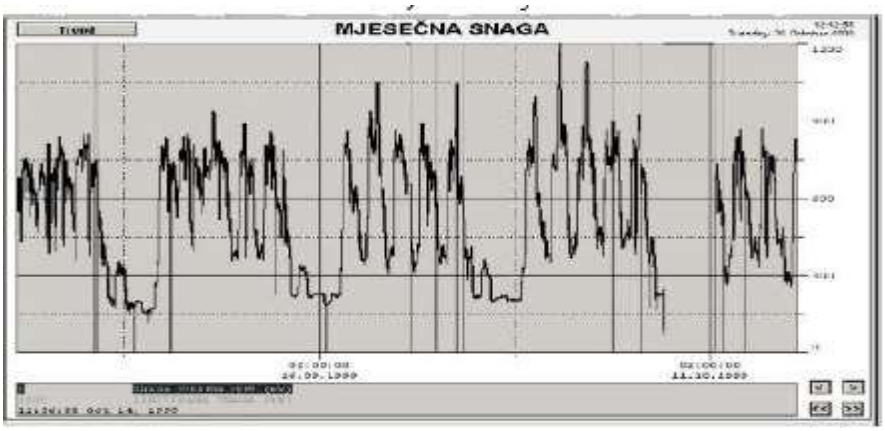
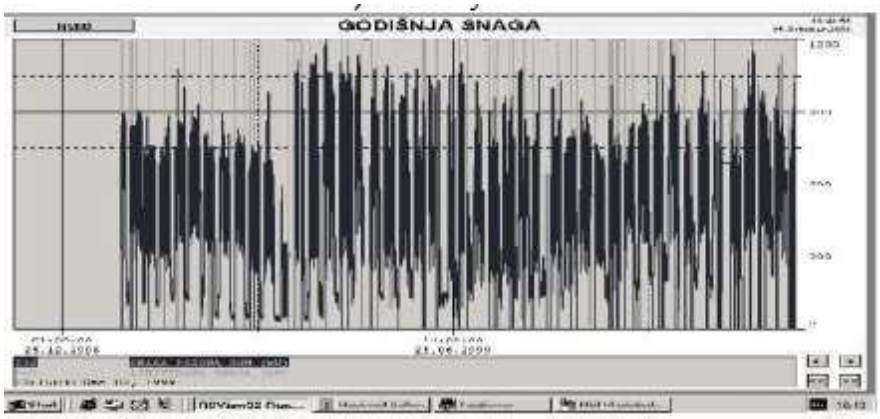


Figure-4: Monthly



Power and energy monitoring system was organized in three levels:

a) Plant level

Tasks of metering, meter data collection in PLC, cyclically calculating average consumption, sending telegrams to PC SCADA, short-term energy forecast calculation and consumption switching control based on commands from SCADA PC, PLC algorithm running are all performing in plant level. When choosing way of collecting real time measuring data, pulse signal was recognized as best cost effective solution, in comparison with analogue signal with integration in PLC or with communication capability of meter. Sub metering devices are to be placed in some process and energy consumption interesting points, and in way to optimize number of implemented PLCs. PLC is programmable device that works in operating cycle with steps as follows:

- Input scan - scan and read all input data,
- Program scan – executing application program,
- Output scan – write all output data,
- Service communication – communication takes place with PC.

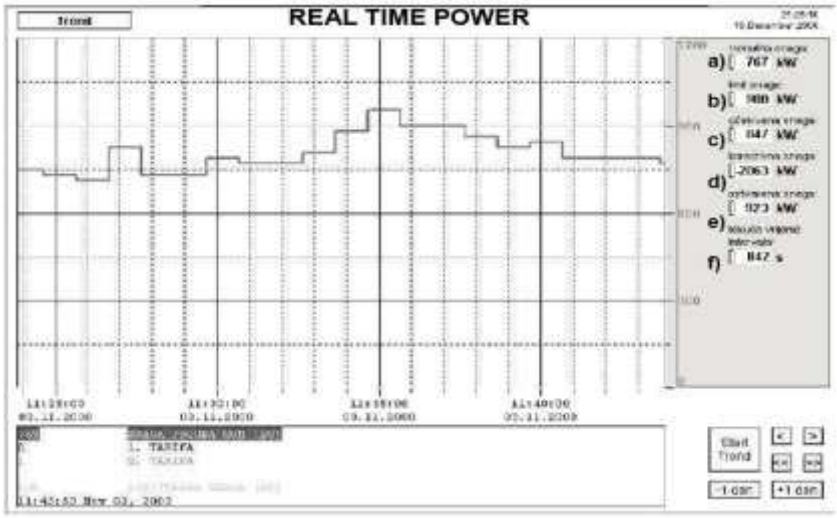
b) Communication level

Communication between PLCs & SCADA PC is performing via some standard multipoint communication network. Data transmission flow is in one way metering data, in other commands for switching consumers on or off, all via some standard protocol.

c) Operator level

Central data acquisition, data storage and presentation, data manipulation and commands generation is performing on SCADA PC. This level contains system setup too.

Figure-5: Real Time SCADA Power Time Diagram with Description of Indicated Measured and Calculated Values



a) *Atcual used power,*

b) *Usre set limit power,*

c) *Forecasted power at the end of counting interval,*

d) *Allowed switch on/off portion of power,*

e) *Raelized peak power,*

f) *Actual time in interval (0 – 900 s).*

Data storage capability ensures possibility of presentation of collected data in hourly, daily, weekly, monthly, and annual trend curve (Figure 3 & 4). Figure5 shows main SCADA screen with real time trend diagram of main electrical power and some usable information for plant operator:

- Actual used power,
- User set limit power,
- Forecasted power at the end of counting interval,
- Allowed switch on portion of power, or suggested switch off portion of power, depending on short term forecast,
- Realized peak power,
- Actual time in interval (0 – 900 s).

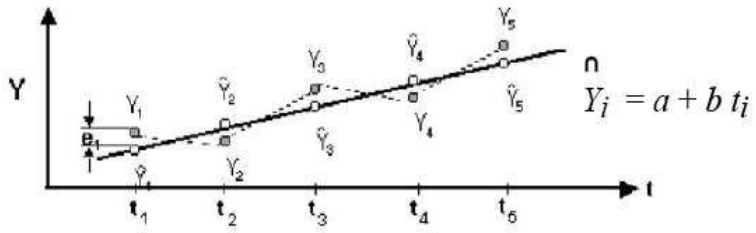
From such screen main plant operator or main plant technical person can in time decide about optimal plant running. Main tool for estimation of allowed switch on portion of power or suggested switch off portion of power is "short time energy forecast algorithm".

SHORT TIME ENERGY FORECAST

Power / energy forecast is sequence of time analysis considering measuring data and data in previous interval in purpose estimation average power in the end of 15 minutes (or other) official utility counting interval. Input data are pulses from main meter, 15 minutes and tariff pulses from pulses from official synchronizing clock[1].

Algorithm used in forecast purpose was based on linear regression extrapolation method. Linear regression indicates best results in trend analysis and it is possible simple numerical realization. Best placing regression straight line is done by minimizing sum of quadratic deviation from equidistant power measuring points shown in Figure6[2, 3].

Figure-6: Deviation from Power Metering Points



Precision of realized method directly depends on frequency of pulses from main meter. Studying forecast algorithm in use indicate approximately 2% uncertainty forecasting after the 1/3 of interval and lowering as the end of interval is closer.

CONCLUSIONS

This paper describes basic principles and some results of one cost effective approach in designing system for permanent monitoring and power limiting in industrial plant.

A modern SCADA system makes possible implementation of the SCADA WEB server application and easy integration with company Intranet as efficient way for real time reaction in Energy management and post time analysis tool too.

System is more usable if more well placed measuring and switching elements exists. Cutting peak energy supply load has primary economical, but reducing environment pollution reasons too.

REFERENCES

1. Smith, I. R., and Snyder L.A. (1970). "Detection and Measurement of Three-Phase Power, Reactive Power and Power Factor with Minimum Time Delay, Proc. IEEE, November.

2. Brown, R. G. (1965). Smoothing, Forecasting and Prediction of Discrete Time Series, Prentice Hall, Englewood Cliffs, New York.

3. Dorić, D.; Karavidović, D., and Steinbruckner O. (1994). Mjerenje i obrada podataka o potencijalu uzemljivačkih sustava, Zbornik radova seminara Mikroračunala u tehničkim sustavima MIPRO 94, Rijeka.

*****