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DR PRAVEEN JAIN
Chief Editor & Hony. Secretary
Research Development Research Foundation
4-Ma-22, Jawahar Nagar, Jaipur- 302004
Tel : +91-141-2650498
Mob:- +91-9799201212
drjain.rda@gmail.com, drjain2001@rediffmail.com
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Re-Designing Banking Processes with Technology: How ICICI Bank and Axis Bank Continue to Redefine the Rules of the Game

Supriya Bhasin and Pratibha Garg

Keywords: *Business Process Reengineering, Digital Revolution, ICICI Bank, AXIS Bank, Chat Bots, Artificial Intelligence, Robotics Software, Blockchain Technology*

Abstract

Digital transformation of banking processes is the most significant plan for all banks across the world. Use of information technology successfully addressed the numerous external threats and pressures that banks face amongst them - mounting costs of regulations and demanding customers who constantly prefer more expediency and a tech-savvy quotient - are regular to all banks. Several banks have started feeling threatened and face a harsh competition from the new bank licensees which are unquestionably digitally up to date competitors. As the banking state of affairs move more towards the buyer's market from the seller's market, almost all banks are now offering multiple services like mobile banking, internet banking, loans, credit/ debit facilities, investment options, stock broking to name a few. Banks' digital renovation is pivoted on Information Technology, customized products, simplifying the processes to the greatest extent, offering as much ease to the customers as possible and developing numerous delivery channels. The largest private sector lenders in India - AXIS Bank and ICICI Bank are at diverse stages of digital gameness. They have adopted technology advancements swiftly enough to be called the Market Leaders of Business Process Re-engineering initiatives in the Indian banking sector. This paper discusses the ways in which these banks are redesigning several of their processes. The rationale of this paper is to illustrate the latest tech-tools and software lucratively adopted by these banks. The study reveals that Chat Bots, Artificial Intelligence (AI) led engines and Robotics Software are in their emerging stages and would vitally modify the banking scenario sooner than expected. The paper wraps up with a brief discussion on Block chain technology and the reasons why it is getting the banks so excited about the sheer scale of possibilities that it will offer in the future.

Supriya Bhasin, PhD Research Scholar, Amity School of Business, Amity University, Noida (U.P.), India.

Dr Pratibha Garg, Assistant Professor, Amity School of Business, Amity University, Noida (U.P.), India.

Introduction

Business Process Reengineering is defined as the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary modern measures of performance, such as cost, quality, service, and speed." (Hammer and Champy, 1993) By definition, a business process is a structured, measured set of activities designed to produce a specified output. Any business process in a bank can be characterized into three major elements:

- **Inputs,** (such as customer inquiries or customer requests),
- **Processing** of the data (which usually goes through several stages and many necessary stops that consume man-hours and other resources),
- **The outcome** (the delivery result as expected by bank and customer).

The most critical part of any process is processing of information. Business Process Re-engineering activities in banks mainly intervene in the processing part, which is reengineered in order to become less time consuming and more cost effective.

An Example of Business Process Re-engineering Application in a Bank:

Suppose the bank has a customer who wishes to apply for a

new Account, enquire about a Home Loan and obtain a Credit Card. In a typical vertical organization structure, this customer may need to get his three requests processed in three different queues to get them all done.

For this very purpose, if BPR is applied, it would take the form of "One Stop Shopping". It will require the close coordination of a team of dedicated staff assigned to the processes powered by Information Technology for exchanging all the information and documents in order to service the customer's requests.

Specifically for this example, this customer applying for a Home Loan will trigger a team of staff assigned to service a home loan application. The customer shall be assigned one person, who will be his "Case Manager". The Case Manager is required to complete the application for a home loan in an electronic form, which in turn gets submitted through the intra-network to the next team member - the credit control director, whose role is to examine the credit status of the customer.

If the credit status is not found to be satisfactory, the rejection of the loan may be decided by the credit manager and a rejection form is completed mentioning all the details and returned to the case manager. The case manager in turn explains to the customer the reason behind his application being rejected. On the other hand, if the credit status of the customer is found to be satisfactory, the credit control director submits the electronically completed application to the next team member, whose function is to calculate the interest rates and provide the detailed payment tables. The application complete with all details may then be submitted back to the credit manager for final approval using a digital signature. The approval of the application along with the payment tables and all other details gets delivered to the customer by the case manager who was assigned to deal with his case.

The common business processes in any bank include (but are not limited to) opening of new accounts, funds transfer, loan disbursement, issue of credit/debit cards, balance inquiry, change of personal particulars of the account holder(s) etc. Few products which are now common to all banks are: various types of deposits/accounts, credit and debit cards, loans (Personal, Auto, Housing etc.), insurance, mutual funds etc. All banks now rely on multiple channels of distribution viz. internet banking, mobile banking, call centers and branches. The pillars of Business Process Re-engineering initiatives in banks have been: A complete re-design of its branches, Centralized Processing Centers (for processing the enormous amount of electronic and other data), multiple delivery channels and customized products.

Digitization of processes eliminates paper, cuts costs dramatically while most of the routine banking can be oriented towards self-service. Mobile apps can be very convenient to use and with so much pre-existing customer data and trust, banks can devote resources to focus on product innovation. The availability of Digital technology is not proving to be very difficult - it is usually delivered to the client (the banks) by collaborating with external tech-based firms. The Software and Apps can be developed and installed efficiently. The only point that concerns the banks and customers alike is Cyber-security.

Banks are known to typically take two independent approaches to achieve digital transformation. The first is Business Process Re-engineering i.e. digitization that involves a relook at the processes and re-imagining them with digital technology. This quite often leads to radical process changes

for example doing away with paper-based forms altogether or anticipating customer needs and sending them debit cards/ cheque books in advance. If this is done well, it leads to improvement in service levels and higher engagement of customers. The second approach is to incubate a new all-digital bank outside the traditional bank. This approach is akin to let's say the owner of PVR Cinemas setting up a video streaming business in anticipation of competition from the newer platform (Tripathi, 2016).

The focus of this paper is on the first approach of the banks as mentioned above. The paper examines the latest tech-based tools adopted by two of the leading Indian Private Sector banks and the benefits accrued.

ICICI Bank and AXIS Bank are amongst the largest private sector banks in India by market capitalization and proud members of the Big 4 banks of India - The 3rd and 4th being HDFC Bank and State Bank of India (SBI). The following table depicts the competition parameters amongst the top private sector banks in India (as of June, 2018).

Table 1: Private Sector Banks - Competition

Name	*Last Price*	*Market Cap. (Rs. cr.)*	*Net Interest Income*	*Net Profit*	*Total Assets*
HDFC Bank	2,183.25	568,552.77	80,241.35	17,486.75	1,063,934.31
Kotak Mahindra	1,407.55	268,297.59	19,748.49	4,084.30	264,933.40
ICICI Bank	268.05	172,410.72	54,965.89	6,777.42	771,791.46
Axis Bank	525.75	135,009.78	45,780.31	275.68	691,329.57
IndusInd Bank	1,930.00	115,893.29	17,280.75	3,605.99	221,626.17

(Source: https://www.moneycontrol.com/competition/axisbank/comparison/AB16)

In contrast to most public sector banks, AXIS Bank and ICICI Bank have had significant exposures to retail assets due to their well-developed retail franchises and diverse product offerings. Also, these three banks have benefitted from their portfolio of larger corporate clients. Unlike other banks, AXIS and ICICI have had better credit selection and monitoring of its exposures to mid-sized corporates, and have better asset quality experience in this segment. They also continue to have sound levels of capitalization.

These banks have been adopting technology changes rapidly at a rate which comfortably enables them to be called the Market Leaders of BPR in the Indian banking sector; hence this paper endeavors to be a comprehensive analytical study of their trysts with adapting the latest technologies.

Re-Engineering Banking Processes with Technology - How ICICI Bank and Axis Bank are Re-Defining the Rules of the Game

ICICI Bank

The pioneer of BPR exercises in Indian Private Sector banks is the ICICI Bank- the largest private

sector bank in India by market capitalization. A strategic partnership between ICICI Bank and Infosys began around 1995 and in 1997, it was the first bank in India to offer Internet banking with Infosys' creation "Finacle" (a core banking and universal banking solution) and its e-banking solutions and established itself as a leader in the Internet and e-Commerce space. Subsequently, several e-Commerce services like Bill Payments, Funds Transfers and Corporate Banking were offered - all over the net. With the ICICI group having several companies under its umbrella, Finacle needed to seamlessly integrate with multiple applications such as credit cards, mutual funds, brokerage, call center and data warehousing systems. Another key challenge was managing transaction volumes. ICICI Bank underwent a phase of organic and inorganic growth by acquisitions and mergers. However Finacle was successfully able to manage the resultant increase in transaction levels from 400,000 transactions a day in the year 2000 to nearly 2.1 million by the year 2005 with an associated growth in peak volumes by 5.5times. With Finacle, the bank currently has the ability to process 0.27 million cheques per day and manage 7000 concurrent users (Shukla, 2010).

Talking about the latest developments, ICICI Bank has deployed "Robotics Software" to automate business processes. It has become the first bank in the country and among the few globally to install software robotics to power its internal banking operations. Robotic process automation is being used by the bank in over 200 business processes across various functions of the bank to perform repetitive, high volume and time-consuming tasks cutting across multiple business process functions including retail banking operations, agri-business, trade and forex, treasury and human resource management, international remittances and private banking among others. The bank has implemented the software robotic platform in-house, leveraging recent advancements in AI such as facial and voice recognition, natural language processing, machine learning and bots. ICICI Bank has bought the robotic automation platform from an international player called 'OpenSpan'.

The software robots are processing over 2 million transactions daily, bringing in greater operational efficiency, higher accuracy and a massive reduction in processing time for customer services. Talking about efficiency, the bank has seen significant improvement in the reducing the response time to customers specifically in the area of ATM query resolution. For example, in certain situations, when a customer used to operate an ATM for cash withdrawal, the amount used to get debited from his account even when the money was not disbursed at the ATM. Banks are allowed upto 7 days to complete the ATM query resolution and as against that, ICICI Bank used to typically take 12 hours. Now with the adoption of this software robot the bank has been able to bring this down to 4 hours with 100 % accuracy.

At a global level UBS Bank and Goldman Sachs have leveraged robotic process automation to automate business processes that are routine, repetitive in nature and are high volume. In 2016, about 10 percent of the ICICI bank's internal transaction processing was on this platform with 200 software robotics performing 1 million transactions daily. Two years hence, the private lender has scaled it to more than 750 software robotics handling approx. 2 million transactions daily which is 20% of the transaction volumes.

According to the senior officials of the ICICI Bank, most of the software robotics is geared to manage voluminous repetitive processes efficiently. They cite that in the banking operations, there is generally a lot of information that they sometimes move from one application to the other and

while doing this they use some rules. These are the kind of operations that the software robotics platform has helped them simplify. One big advantage they enumerate is that of the software robotics helping them with demographic data validation thereby ensuring consistency across various operations.

As an example, one important case is with respect to the 15G/H which every senior citizen submits at the beginning of the financial year. Typically, the time to submit it is April and May so the volumes of submissions tend to go up during that period. When the customer submits the 15G/15H, it is the duty of Operations to ensure that all the holdings that he has with ICICI have been covered in the 15G/15 H certificate.

The minute the customer's hands over the 15G/H to the branch, it is checked for signature and then through an internal application, the branch scans it and sends it to Operations. At this step, the software robotics platform checks the core banking to make sure that all the fixed deposits that the customer has are covered and therefore ensures that there is no miss-out and there is no hassle to a customer subsequently for any inaccuracy that there may be (Jha, 2016).

ICICI Bank has also started leveraging "Artificial Intelligence (AI)" along with their software robots. It has introduced AI led engine in its international remittance operations. This has helped to reduce the query resolution time. When customers remit money from international locations into India, there is always a bit of anxiety and they used to write to the bank asking for an update. This was manually handled earlier. The bank has now created an AI engine which is able to read the customer query, understand the intent of the mail and make sure it goes into the processing system, make a reply and submit it to the customer. Earlier, it was manually handled and took the bank 12 hours to turnaround the request. Now it is done in real time. The bank is also using AI in document scrutiny. The Operations team is responsible for documents submitted by customers in line with what is required of them. Earlier these checks were being done manually. Now, an AI engine aided by OCR (Optical Character Recognition) is able to do this much faster and much more efficiently.

ICICI bank has also deployed "Chat Bots" for customer queries and documentation. This has helped their operations' teams to give real-time responses to customer queries including our own employees. Now if an employee needs to know what documents he needs to pick up from a customer he can invoke the ChatBot, get the reply and even get the formats of the documents that he is supposed to collect from the customer (Jha, 2018).

AXIS Bank

Axis Bank started its digital journey five-six years ago. In the first phase, the bank took a 90,000-feet view of process redesign - what to centralize, what to keep in the branches and got the organization realignment done. The second phase was about "Lean and Business Process Re-engineering" where the focus was on getting it right the first time. The third and fourth phases, currently under way, involve "Digitization at Scale" and the use of new-age tools like Robotics Process Automation (RPA), Machine Learning (ML) and Artificial Intelligence (AI). The bank is now implementing a series of measures that include self-service kiosks, Aadhaar-based customer services, and automation. All these are aimed at increasing the momentum of its digital transformation journey. The bank has installed digital self-service kiosks, which it has christened as "speed banking" services, at over 1,000 branches (out of a total of around 3,400 branches),

in addition to deployment of 25,000 biometric readers across its network to adhere to eKYC (electronic know your customer) norms in new account sign-ups and other Aadhaar-based services.

In a novel initiative, Axis Bank has provided 16,000 tablets to its customer officers in its branches. This, according to the bank officials, will help customer requests and updates to be done digitally rather than first asking users to fill up a form, and then sending it to a central team, which is a time-consuming routine. According to the bank, 85% of household current and savings accounts are now opened through these tablets out of which 50% are done using eKYC.

One of the key initiatives of the bank is a project called Pratham, in which it took a relook at 125 "customer journeys" (such as opening a bank account, getting a credit card or taking a loan) in an attempt to realign the processes to match customer expectations. Another project, Saksham, hides the complexity of multiple softwares in the back-end and brings simplicity and ease-of-use at the front end. 5 million financial transactions are being done on Saksham on a monthly basis.

For the next big step involving automating certain processes using robotic and AI tools, AXIS Bank has done a strategic tie-up with WorkFusion Inc. - a US-based provider of automation solutions. An illustration of the Robotics Process Automation (RPA) solution in AXIS Bank: Since not all customer documents received by Axis Bank are digital, data entry and manual checking of about 50% of customer documents was a time-consuming, error-prone process.

So far, Axis Bank has identified 90 such processes where RPA is being applied, with 10 processes already using the solution and the remaining being tested. For instance, the process of account modification in retail banking and that of checking of the documents for letter of credit in corporate banking has been automated using RPA. Using RPA, Axis Bank claims to have reduced the turnaround time on savings account opening by about 90%, on current accounts by 92%, and on various other processes by 50-80%.

Very recently, AXIS Bank launched its "ChatBot" - "Axis Aha!" - An efficient virtual assistant powered by cutting-edge technology. This unique Chat Bot can provide relevant and contextual responses to customer queries and even helps make transactions on the chat window itself. Customers can initiate transactions either through voice or chat. It enables customers to execute transactions, explore products and avail banking services by using simple words used in daily conversations. Currently hosted on the home page of the Bank website, www.axisbank.com, 'Axis Aha!' is capable of performing diverse actions like fund transfer, bill payments, recharges and also manage card limits, block credit and debit cards, besides others. The voice and chat interface also provides customers an opportunity to inquire regarding any of his banking needs. The bank has planned to gradually extend this interface to its Mobile banking App and the Internet Banking Application (Axis Bank, 2018).

Conclusion and a Discussion on Blockchain Technology

The nature of Digitization of the processes of banks is continuous, challenging and transient. With the advent of newer technologies like Artificial Intelligence (AI), Robotics Software and Chat Bots, banking sector shall not remain immune from their effects. As evident, the use of such technologies in both ICICI Bank and AXIS Bank has reduced the response time to their customers and increased

accuracy to 100% thereby sharply improving the banks' productivity and the ability to handle scale efficiently. It has also enabled the banks' employees to focus more on value-added and customer service related functions. Moving away from manual processes has helped the banks' employees to ensure that processes are designed correctly and any fall-outs in the process are handled quickly.

In 2016, ICICI Bank declared that it had successfully executed transactions in international trade finance and remittances using Blockchain technology in partnership with a Dubai based bank Emirates NBD making it India's first bank to explore this medium. A Blockchain is an anonymous online ledger that allows users to manipulate the ledger in a secure way without the help of a third party. While a bank's ledger is connected to a centralized network, the algorithm used in blockchain reduces the dependence on people to verify the transactions - therein lies its appeal.

Banks are experimenting with this technology as they feel that this application helps to convert the paper-intensive international trade finance process into a single electronic decentralized ledger which gives all the participating entities, including banks, the ability to access a single source of information. It would also enable banks to track documentation and authenticate ownership of assets digitally, as it is an un-alterable ledger in real time. Indian IT service providers like Infosys and TCS have realized the benefits of Blockchain Technology and are using this mechanism to create core banking platforms for banks (Dhar, 2017).

Several banking experts predict that it may take maximum five years to digitize all banking and trade eco-systems but Blockchain technology will have the potential to be the genuine game changer and may disrupt the entire financial system.

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A Study of the Factors Influencing Parasocial Interaction towards Idol: Case Study of BNK48

Bhumiphat Gilitwalla and Thisanan Tantiwanitchanon

Keywords: *Parasocial Interaction, Similarity, Expertise, Likeability, Media Exposure, Self-disclosure, Idol, Celebrities*

Abstract

In the music entertainment industry, the relationship between the artists and their fans are the important factor to success and it can apply to create more value in the businesses. However, as people's lifestyle is changing, the market becomes more and more competitive, and idol artist model has become to be interesting in the music entertainment industry, how the celebrities could continue to maintain popularity by attracting the audiences to interests and keep a long relationship with the celebrities that both the celebrities and businesses have to think about.

Based on the Parasocial Interaction (PSI) perspective, this study aimed to determine factors influencing parasocial interaction between the celebrities and their fans toward BNK48, a famous idol girl group in Thailand. There were 390 questionnaires distributed to the respondents who are BNK48's fans. The findings presented that four variables had a significant influence on parasocial interaction which was similarity, expertise, likeability, and media exposure that the similarity between both sides was the most influence. However, self-disclosure has no significant determinants of parasocial interaction that might be the reason of their official roles to set the privacy of the members. Finally, this study also proposes several practical suggestions for celebrities and businesses.

Dr Bhumiphat Gilitwalla, Lecturer, Director of Special MBA at Graduate School of Business, Assumption University of Thailand

Thisanan Tantiwanitchanon, Students of Master of Business, Assumption Universaity of Thailand

Introduction

For many years, Thai entertainment-music industry was dull and out of trend. People's lifestyle has changed. Everything is on the internet and the online world. Most people listen to music through streaming music or provided an application. The CDs and Tape cassettes have been out of date. Many record labels went out the business. On the other hand, there is a company that goes against the direction of Thai entertainment-music industry trends. They found the success chance in that situation and imported idol management model from Japan to start a new trend in Thai entertainment-music industry, then BNK48 is generated.

BNK48 is a franchisee of 48 Group. 48 Group looks like a Japanese common girl group but has a complicated organizational structure that including 6 branches in Japan and 4 branches in other counties whereas each branch will be separated into several teams that take turns performing at the theater and events.

Presently, 48 Group is called an idol girl group. The word 'Idol' in term of the entertainment industry is defined by Cheung and Yue (2000), someone who has talents, accomplishments, and physical appearances that are appreciated and admired by fans. From the definition, it means the person who is interested and accepted to be a role model in performing. Idol is not limited in gender but it almost uses to call females who be cute, be cheerful, has a good performance and good looking that able to be a role model to other, likes 48 Group. A unique concept of

48 Group is the turnover of members to be the main performers (they are called 'Senbatsu') in each song that there are only 16 members. It makes all members try hard to pass the audition for the opportunity to be outstanding in the show. Idols' attempt to effect their fans to admire them and try to support them, moreover young fans set them to be role models to achieve success in their dream. This concept gives their fans can relate to idol's improvement by following from 'trainee' member until graduates or leave the team.

According to BNK48 booming in a short time, they released 3 single albums with sales volume more than 213,500 CDs that was around 75 million Baht. This value did not include other BNK48 products and event such as Photo Set, BNK48 Campus Card, Thailand Football Club x BNK48 Box set and BNK48's concert tickets that may be more than 52 million Baht. The factor of idols that affect the pleasure of fans toward BNK48 is interesting to study for understanding the perspective of people in idol appearance, which they like and want to interact.

Literature Review

1. Similarity and Parasocial Interaction

Rogers and Bhowmilk (1970) stated similarity as the level that interaction of people is similar in something such as attitude, faith, status, education, and the liking. Also, similarity is defined as the learning process in people appraisal or things that are similar in perspective or perception generally by Hoffner and Cantor (1991). Xiang, Zheng, Lee and Zhao (2016), found that similarity which is in the social-relevant features determines parasocial interaction. The social attraction is determined by the social-relevant features of Social commerce community that positively effect parasocial interaction. Supported by Turner (1993), Hsiu and Wen (2017) and Eyal and Rubin (2003), individuals often interact with others who share a same degree of similarity and they believe their own beliefs in these interactions. They confirm there is a positive relationship between similarity and parasocial interaction.

H1: Similarity has a signification influence on parasocial interaction

2. Expertise and Parasocial Interaction

Cowles, Kiecker and Little (2002), stated that the consumers prefer products that the expert has approved and believed in the profession opinions from the expert. Like Kelman (1961) stated that expert's opinions are more credible and reliable than other. Supported by Xiang et al. (2016), they found that social commerce users are likely to interact with others who are knowledgeable about brands and products. In addition, expertise is one of the social-relevant features that determine parasocial interaction (Xiang et al. 2014).

H2: Expertise has a signification influence on parasocial interaction

3. Likeability and Parasocial Interaction

Fiske and Neuberg (1990) noticed that individual usually determine the person's social worth and evaluate at the first time they meet. Supported by Rubin and McHugh (1987), they found likeability or Social attraction also contributes to the relationship development. In addition, Liking of media personality has been found to be important predictors of parasocial interaction (Moyer-Gusé, 2008; Schmid and Klimmt, 2011; Turner, 1993).

H3: Likeability has a signification influence on parasocial interaction

4. Self-Disclosure and Parasocial Interaction

Self-disclosure has was defined as sharing information with others on their social media, the information is a variety of things about themselves that can be personal information, feeling, emotion, interesting, experiences, and also tangible things like photos (Liu, Min, Zhai, Smyth and Margulis, 2016; Kassing and Sanderson, 2010; Hambrick, Simmons, Greenhalgh, and Greenwell, 2010; Stever and Lawson, 2013). Altman and Taylor (1973) found that self- disclosure plays a key role in the interpersonal relationship. Like Auter (1992), he suggested that the celebrities' self-disclosure have a positive relationship with parasocial interaction. In addition, Rime (2007) argued that self-disclosure can maintain and strengthen the closeness of the relationship. Moreover, Hsiu and Wen (2017) determined YouTubers' self-disclosure is the significant determinant of parasocial interaction.

H4: Self-disclosure has a signification influence on parasocial interaction

5. Media Exposure and Parasocial Interaction

Atkin (1973) defined Media exposure was adopting the news and knowledge to understand the social surrounding and comprehend the fact. Mazis and Raymond (1997) stated that a variety of media is used to communicate product awareness and benefits to advertise to a target audience such as television commercials and print advertisement. Like Belch and Belch (1995) suggested these media are often correlated to be single integrated communication. Moreover, Schultz, Tannenbaum, and Lauterborn (1993) defined media exposure as an opportunity for an audience or a message receiver to acknowledge the message in a particular media channel. Supported by Rogers (2003) determined Media exposure has the most powerful effect on the diffusion of spreading knowledge of innovations to a large audience rapidly. Rubin and McHugh (1987) examined television as the driver for parasocial interaction development, the research has investigated how parasocial interaction develop for different types of figures such as opera characters (Rubin and Perse, 1989), comedians (Auter, 1992), TV shopping hosts (Grant, Guthrie, and BallRokeach, 1991). In addition, parasocial interaction and relationship are strongest when television personality engages the audiences through repeated exposure (Koenig and Lessan, 1985). From the recent studies on parasocial relationships in new media, they suggested that the interactive nature of digital media like Facebook (Joinson, 2008; Tsiotsou, 2015) and Twitter (Bond, 2016; Frederick, Lim, Clavio, and Walsh, 2012; Stever and Lawson, 2013) promotes parasocial interaction, and encourages the users to develop more parasocial interaction and relationship (Chen, 2014). Labrecque (2014) described more as the viewers may follow and become "friends" or fans with individuals they personally know, with others known through friends, with brands, organizations, and with both celebrities and their character representations. However, although the interaction might be occurred on these social media by following the celebrities, accessing the celebrity does not necessarily promote a relationship

H5: Media exposure has a signification influence on parasocial interaction

Conceptual Framework

The researcher modified the conceptual framework by Rubin and McHugh (1987) who studies the

attraction and television media to influence parasocial interaction. And the research by Hsiu and Wen (2017) who studies about determining the causal relationships that affect the loyalty based on the role of parasocial interaction between similarity, expertise, likeability, self-disclosure, and media exposure.

The previous study has implicitly assumed factors that are significant predictors of viewers' perception of parasocial interaction perspective. To modify the conceptual framework, the researcher developed based on two research models, the study by Rubin and McHugh (1987) who studies the attraction and television media to influence parasocial interaction and the study by Hsiu and Wen (2017) who studies about determining the causal relationships that affect the loyalty based on the role of parasocial interaction between similarity, expertise, likeability, self-disclosure, and media exposure.

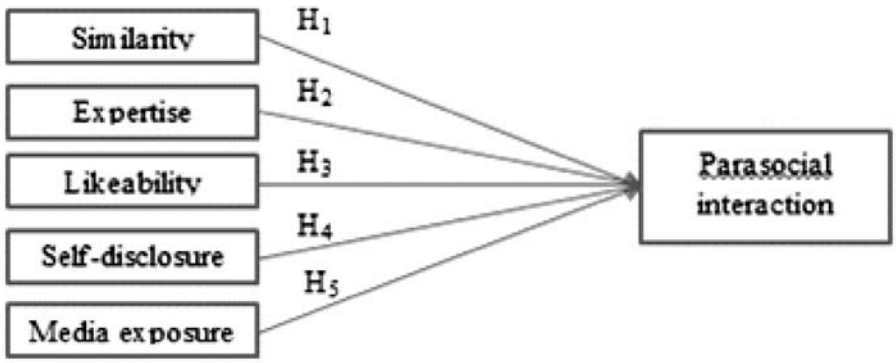

Figure 1: The Conceptual Framework

Research Methodology

1. Instrument and Sample

Descriptive research and survey method are adapted to conduct in this research. The researchers used Thai and English language questionnaire was a survey method to collect the data from respondents, according to McDaniel (1986) and Zikmund (2003) stated that a survey was a research technique in which the respondents' information was collected by using a questionnaire which is a 7-Point Likert Scale ranges from (1) strongly disagree, to (7) strongly agree. The respondents were BNK48's fans and had positive feeling with them in both male and female that live in Thailand. The collected data was analyzed by several types of analysis. Cronbach's coefficient Alpha test was used to test the reliability of the questionnaire. Descriptive method was used to describe the characteristics of a population in what they believe. Linear Regression method was used to test the level of influence of independent variables on dependent variables.

The sample size of this study was 390 samples that divided into 26 groups followed the number of BNK's members. The majority of the respondents were male (n=268, 68.7%). The most respondents are single (n=364, 93.3%). Respondents aged 20 years old or below composed the largest group (n=132, 33.8%). The highest percentage of income level is less than 10,000 Baht (n=163, 41.8%). The most respondents are in a Bachelor's degree in education level (n=220, 56.4%) and the

students are the most in respondents' occupation (n=191, 49%).

1. Instrument Reliability

The independent and dependent variables of this study were tested the reliability, which are similarity, expertise, likability, self-disclosure, media exposure, and parasocial interaction. The value of Cronbach's coefficient Alpha test after testing should be equal or greater than 0.60 so that it can be accepted as reliable questionnaire, Sekaran (2003) defined.

Table 1: The Summary of Reliability Analysis

Operational Variables	*Cronbach's coefficient Alpha score*
similarity	.715
expertise	.626
likability	.825
self-disclosure	.615
media exposure	.658
parasocial interaction.	.762

Hypotheses Testing

The multiple linear regression analysis was applied to analyze the hypothesis of this study. The below table would show the result from collected data analysis in questionnaire part 2 that refer to the independent variable which includes similarity, expertise, likeability, self-disclosure, and media exposure, to influence on dependent variable which is parasocial interaction.

Table 2: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.489[a]	.239	.229	.42440

a. Predictors: (Constant), MEANMED, MEANSELF, MEANEXP, MEANLIKE, MEANSIM

The value of adjust R-square should be used to explain dependent variable by dependent variable and show a different number of independent variable that be important predictors for regression model. The adjust R-square's value was equal to 0.229 which mean 22.9% of parasocial interaction was influenced by similarity, expertise, likeability, self-disclosure, and media exposure.

Table 3: Coefficients

		Unstandardized Coefficients		*Standardized Coefficients*	
	Model	*B*	*Std. Error*	*Beta*	*Sig.*
1	(Constant)	1.963	.251		.000
	Similarity	.221	.041	.271	.000
	Expertise	.108	.040	.131	.007
	Likeability	.093	.043	.105	.033
	Self-disclosure	.027	.034	.039	.424
	Media exposure	.162	.038	.198	.000

Dependent Variable: parasocial interaction

In this study, there are five hypotheses which using Multiple Linear Regression to analyze and examine the influence of similarity, expertise, likeability, self-disclosure and media exposure on parasocial interaction. According to the result of hypothesis testing, it showed that four null hypotheses were rejected with statistical significance including H1, H2, H3, and H5. It can be summarized that similarity, expertise, likeability, and media exposure had a significant influence on parasocial interaction. However, another null hypothesis was failed to reject the composing of H4. It can be concluded that there was no influence of self-disclosure on parasocial interaction.

Moreover, the ranks of the influence factor were arranged from the strongest to weakest. The average beta was used to determine the influence level of variables that average beta of this study was 0.176 that means when the beta of the variable was more than .176 indicated as the strong influential factor and was less than .176 indicated as the weak influential factor. The result presented that similarity between BNK48 and their fans was the strongest influential factor with the beta of .271 and likeability was the weakest influential factor with the beta of (.105).

Discussion

1. Similarity

Similarity has a significant influence on parasocial interaction and has the most substantial influence among other variables in this study. This conclusion is supported by Supported by Turner (1993) and Eyal and Rubin (2003), they stated that people often interact with others who share something similar and believe in their own beliefs in these interactions which was confirmed a positive relationship between similarity and parasocial interaction. Also, it was defined as the learning process in people appraisal or things that are similar in perspective or perception generally by Hoffner and Cantor (1991).

2. Expertise

Expertise also has a significant influence on parasocial interaction but has a weak influence among other variables in this study. This conclusion is supported by Cowles, Kiecker, and

Little (2002), they state that people believe the expert's suggestion as the professional opinions. Like Kelman (1961) explained that expert's opinions are more credible and reliable than other people. Also, Xiang et al. (2016) found that social commerce users are likely to interact with others who are knowledgeable about brands and products.

3. Likeability

The testing result was shown that likeability has a weak influence on parasocial interaction. This conclusion is supported by Fiske and Neuberg (1990), they proposed that likeability can create a good impression on someone automatically. Supported by Rubin and McHugh (1987), they found likeability or Social attraction also contributes to the relationship development. Also, Liking of media personality has been found to be significant predictors of parasocial interaction (Moyer-Gusé, 2008; Schmid & Klimmt, 2011; Turner, 1993).

4. Self-Disclosure

After hypothesis testing, Self-disclosure has no signification influence on parasocial interaction between BNK48 and their fans. Following the study of Reis and Patrick (1996), they defined two types of self-disclosure which factual self-disclosures share with personal information and emotional self-disclosures reveal personal feelings, opinions, and judgments. These two disclosures reveal private information but emotional disclosures can generate a relationship more than just informational disclosure. However, the result showed self-disclosure has no signification influence, it seems to BNK48's self-disclosure was limited to disclose only information and less to share in deep in individual personal feelings probably. It might have less effect on their fans.

5. Media Exposure

Koenig and Lessan (1985), they investigated parasocial interaction and relationship is strongest when personality engages the audiences through repeated exposure. Also, Chen (2014) suggested that the interactive nature of digital media like Facebook and Twitter promotes Parasocial interaction, and encourages users to develop more Parasocial interaction and relationship. Moreover, Labrecque (2014) described more as the viewers may follow and become "friends" or fans with individuals they know, with others known through friends, with brands, organizations, and with both celebrities and their character representations. Thus, media exposure is a significant influence on parasocial interaction.

Recommendation

Based on the hypothesis testing, the most influential factor is a similarity between the celebrity that is BNK48 and their fans and follows by media exposure, expertise, and likeability. This finding means people will interact with the person that shares the similar attitude, thinking and practical way more than the expertise and the likable appearance of persons, and also in the media exposure that person choose to access in the media. Thus, the artist producers should not miss out to build and create the character of the artist to similar in attitude and practical way of the target group. Moreover, the producers should invest more in media exposure in both online and offline channels to promote and increase their interaction with their fans.

On the other hand, the artist should focus on their attitude and improve their skill to create more the interaction with their fans more than the appearance.

Further Study

According to this study, the independent variables focused on similarity, expertise, likeability, self-disclosure, and media exposure. There might be other variables to influence parasocial interaction, which can be determined in further study. This study paid attention to study in overall of group's image which the respondents were from each fandom of each member. There are two generations with more than 50 members in BNK48 group. So in further study, it might focus on only one member of the BNK48 group who may be the top or most famous to find the direction of the group and can analyze the fans' character in large segment.

In addition, there should study in media exposure of fans in quantitative and qualitative research to analyze the information that they get from the media. This analysis can be used for media planning to gain more the benefit in business media.

Moreover, parasocial interaction can develop to be a relationship and to be loyalty in finally. The study about the celebrity endorsement and the premium sales product should be interested to find the consumer's expectation to be a benefit for businesses and the music company.

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Achieving the Goal of Education for All (EFA) in India: Prospects and Challenges

Rajesh. R and Kumar S.P

Keywords: *UEE,UNESCO, EFA, SSA, Mid Day Meals, Drop-out Rate.*

Abstract

The United Nations Sustainable Development Goals (SDG) envisaged being fully achievable by 2030 has inculcated "quality education" as its goal number four. Worldwide efforts are being undertaken to provide quality inclusive education that encompass the elements of equity and sustainability. India is in the forefront to extend equal access to all students, better education experience through the launching of national flagship programs like Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA) etc. Education For All(EFA), which is a global movement initiated by UNESCO that aimed to meet all the learning needs of children by 2015 still lag behind the prescribed goals. It is necessary to look upon the prospects and challenges faced by the government in the provision of free, compulsory and quality education to its children. This paper primarily probe into the achievement status of UNESCO's goals of Education For All (EFA) and Universalization of Elementary Education (UEE) in the Indian context through the eyes of indicators suggested by the National Institute of Educational Planning and Administration (NIEPA). This paper also tries to focus on the need and relevance of globally acclaimed programme like Mid Day Meal Scheme (MDMS), issues related with increasing drop-out rates and the policy challenges to be addressed.

Rajesh. R, Assistant Professor, PG Department of Economics, NSS College, Pandalam, Pathanamthitta District, Kerala

Dr Kumar S.P, Assistant Professor, PG Department of Economics, SreeNarayana College, Varkala, Sivagiri, Sreenivasapuram P.O, Varkala, Thiruvananthapuram District, Kerala

Fulfillment of more inclusive and sustainable growth goals require the governments to pursue budgetary policies that aim to build up the social infrastructure of the country. Education remains the most significant component in social infrastructure. Enhancement of human capabilities requires the finest development strategy which augments access for quality education, bridging the gender gaps and reducing the inequalities by the provision of more equitable education process. The proper financing of social sector services is being backlogged by fiscal stringencies which emerge as a retarding factor in investment in human capital. Schultz (1961) points out that the economists have in the long run understood that people are an integral part of the wealth of nations. Becker G, (1993), consider that health and education are two vital economic inputs of a country and that investment in these two factors are always beneficial for a nation. Psacharopoulos and Woodhall (1997) maintains that there exist certain criteria for the economic appraisal of the educational investment projects which include direct and indirect economic returns, private and social benefits, financial benefits and burden of education. Thus the expenditure related with provisioning public education remains a concern for the governments. The governments which came to power in India had been able to maintain around 6% of the GDP as the expenditure incurred on social services over the years.

Trends in the Expenditure on Social Services

An analysis of the data pertaining to the budgetary allocations to the social sector services will give a clear picture regarding the government efforts to promote the social infrastructure of the country.

- **Total Expenditure on Social Services**

Table 1: Total Expenditure on Social Services

(in lakh crores)

Particulars	*2013-14*	*2014-15*	*2015-16*	*2016-17*	*2017-18*
Total expenditure	30.00	32.85	33.78	40.60	43.96
Expenditure on social services	7.46	7.68	7.90	9.84	10.94
• Education	3.48	3.54	3.31	3.95	4.41
• Health	1.39	1.49	1.52	2.26	2.25
• Others	2.59	2.65	3.07	3.63	4.27

Source: Economic Survey 2017-18, Volume 2, Government of India.

The total expenditure incurred on social services have shown an increasing trend over the years reaching upto Rs. 43.96 lakh crores in 2017-18. Among the social services education gain a prominent place, this attracted Rs. 3.48 lakh crores in 2013-14 that was increased to Rs. 4.41 lakh crores in 2017-18.

- **Expenditure as a Percentage to GDP**

Table 2: Expenditure as a Percentage to GDP

Particulars	*2013-14*	*2014-15*	*2015-16*	*2016-17*	*2017-18*
Total expenditure	26.7	26.4	24.7	26.7	26.4
Expenditure on social services	6.6	6.2	5.8	6.5	6.6
• Education	3.1	2.8	2.4	2.6	2.7
• Health	1.2	1.2	1.1	1.5	1.4
• Others	2.3	2.1	2.2	2.4	2.6

Source: Economic Survey 2017-18, Volume 2, Government of India.

The expenditure pattern as a percentage to GDP does not follow a regular trend over the years. It shows a declining trend from 2013-14 to 2014-15 and later on to 2015-16. The year 2016-17 shows an increase in the total expenditure to 26.7% of GDP. Looking as a percentage to GDP, the education sector saw a dip in the expenditure to 2.4% during 2015-16, which later became better to 2.7% in 2017-18.

- **Expenditure as a Percentage to Total Expenditure.**

Table 3: Expenditure as a Percentage to Total Expenditure.

Particulars	*2013-14*	*2014-15*	*2015-16*	*2016-17*	*2017-18*
Expenditure on social services	24.9	23.4	23.4	24.2	24.9
• Education	11.6	10.8	9.8	9.7	10.0
• Health	4.6	4.5	4.5	5.6	5.1
• Others	8.6	8.1	9.1	8.9	9.7

Source: Economic Survey 2017-18, Volume 2, Government of India.

The expenditure on social services as a percentage to total expenditure witnessed a decrease from 24.9% in 2013-14 to 23.4% in 2015-16. However marginal increases took place with further focus of the government on social sector leading to a figure of 24.9% in 2017-18. This phenomenon was too visible in the case of education sector which saw a fall from 11.6% in 2013-14 to 9.7% in 2016-17, later rose to 10.0% in 2017-18.

Examining the trends in the pattern of expenditure incurred on social services in general and education sector in particular, it can be inferred that the authorities are re-informed about the significance of the theory of investment in human capital. In India, the goal of Education For All (EFA) is being strived to achieve through the Universalization of Elementary Education (UEE) which is supported by the Right to Free & Compulsory Education (RTE) Act, 2009, that came into force in 2010 providing a legal framework which assures the children of the country in the age group 6-14 years, that it is their right to access free and compulsory education and its completion. The success and failure of nationwide schemes and policies is determined by the magnitude and direction with which the funds are allocated as well as utilized combined by the results.

There are many indicators as identified by the National Institute of Educational Planning and Administration (NIEPA) which help the policymakers to review the laws and programmes in connection with the achievement of the goal of Education for All. Detailing of such indicators will be helpful for understanding the present position of the country in creating infrastructure facilities and learning atmosphere so that it could extent good quality education to the needy children.

- **Student-Classroom Ratio (SCR)**

This can be defined as the ratio of average number of students per classroom during a year. It is being widely recognized as the SCR should be preferably less than 30 due to the reason that students are in a better position to get attention from teachers and the teachers find themselves more comfortable for addressing the needs of the pupils. The SCR in India is as follows;

Table 4: Student-Classroom Ratio (SCR)

Category	*2014-15*	*2015-16*
Primary level (% of schools with SCR >30)	27.51	25.74
Upper primary level (% of schools with SCR >35)	28.96	28.01
% of Govt. schools with SCR > 30) Primary level	25.40	23.45
% of Govt. schools with SCR > 35) Upper Primary level	28.05	27.06

Source: ELEMENTARY EDUCATION IN INDIA Progress towards UEE, Flash Statistics U-DISE 2015- 16, NUEPA

Steady decrease can be seen in the case of SCR in primary and upper primary levels in total, and also in particular the case of government schools.

- **Pupil-teacher Ratio(PTR)**

The ratio of students to teacher has been accepted as 30:1 for primary level and 35:1 for upper primary level. The PTR in India has shown a decent decreasing trend over the years.

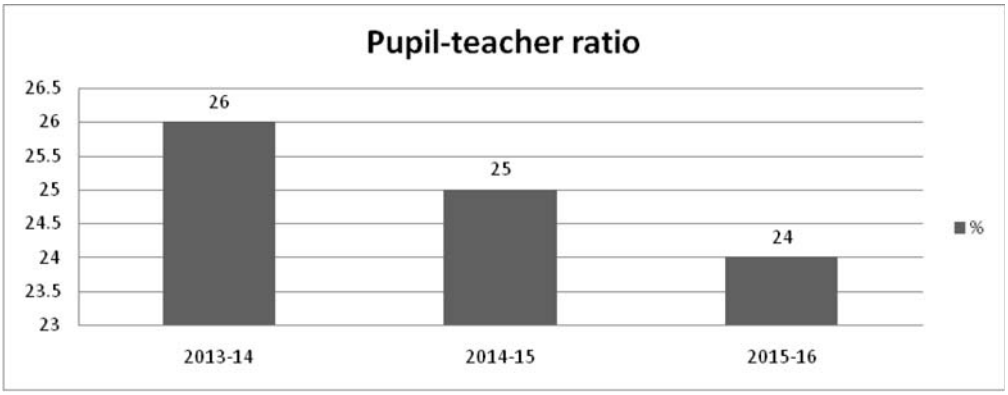

Figure 1: Pupil-teacher ratio (PTR)

Source: Educational Statistics at a Glance, 2016, Ministry of Human Resource Development, Government of India

- **Density of Schools**

The availability of education institutions nearby is a conditioning factor which encourages the children to study by regular means. In India the educational statistics take into consideration the availability of schools per 10 sq.km.

Table 5: Density of Schools

Type of school	*2013-14*	*2014-15*	*2015-16*
Primary schools	3.66	3.68	3.69
Upper primary schools	1.80	1.82	1.85

Source: ELEMENTARY EDUCATION IN INDIA Progress towards UEE, Flash Statistics U- DISE 2015- 16, NUEPA

The density of both primary and upper primary schools shows a marginal increase over the years. When the availability of schools nearby increase it will be helpful for the families to send their children to schools more willingly.

- **Drinking Water Facility**

This is one of the crucial factors determining the enrolment aspects with regard to children. National flagship programmes like SSA and RMSA have got special provisions for developing drinking water facilities in their implementation mechanism in schools.

Table 6: Drinking Water Facility

Category	*2013-14*	*2014-15*	*2015-16*
Primary schools	94.09	94.88	95.78
All schools	95.31	96.06	96.76

Source: ELEMENTARY EDUCATION IN INDIA Progress towards UEE, Flash Statistics U-DISE 2015- 16, NUEPA

It is welcoming to note that in India almost 96% of primary schools have got drinking water facilities which enable children to attend the school regularly.

- **Toilet Facility**

Like drinking water, the availability of clean toilet facility inside the premises of the school is an inevitable factor for students not just for regularity in coming to school but also for their personal hygiene.

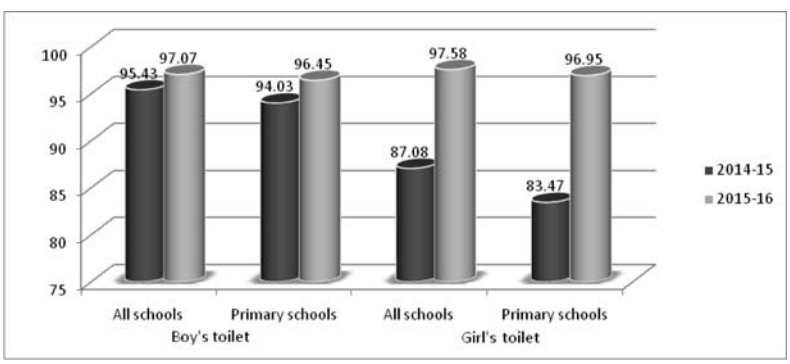

Figure 2: Toilet Facility

Source: Educational Statistics at a Glance, 2016, Ministry of Human Resource Development, Government of India

Remarkable improvement has taken place in the case of provisioning of girl's toilet facility in schools; only 83.47% of the primary schools had toilets for girl children in 2014-15 which significantly improved to 96.95% in 2015-16.

- **Mid-Day Meal Scheme (MDMS)**

One of the prominent steps taken by the government to bring all children to schools and to impart free and compulsory education to them, with giving them necessary nutrition was the introduction of Mid-day meal scheme launched in 1995. The scheme has been envisaged to protect the health and nutrition of school going children and is extremely supportive in realizing the objectives of Sarva Shiksha Abhiyan (SSA).

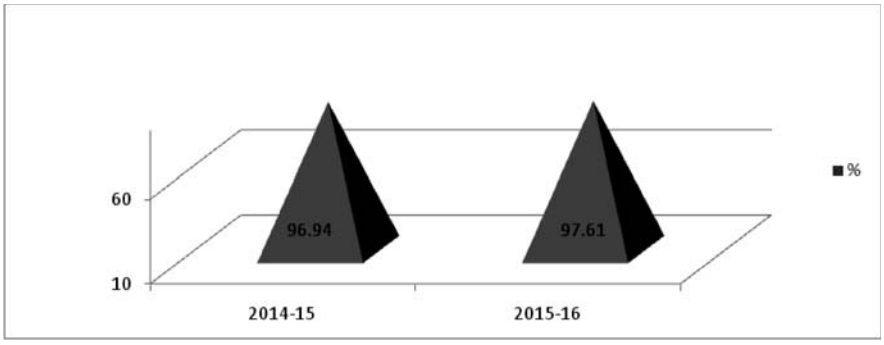

Figure 3: Provision of Mid-day Meals

Source: ELEMENTARY EDUCATION IN INDIA Progress towards UEE, Flash Statistics U-DISE 2015- 16, NUEPA

97.61% of the total schools in the country provide the students nutrition rich mid-day meals.

There exist twin objectives behind the merging of the Mid Day Meal Scheme to the Sarva Shiksha Abhiyan

- There exist a positive correlation between the two schemes in the case of the goals and objectives for which they have been formulated
- The midday meal scheme could actually complement well SSA since one of the cornerstones of SSA is to promote access and reachability of schools to children which can be well functionalized by the MDMS.

Relevance of MDMS

The mid day meal scheme become highly relevant in the country due to the following reasons:

1. The scheme become relevant as the parents of pupils coming from remote villages and backward areas find the question of livelihood more important than sending their children to schools. Such a mentality could be operative in retarding the implementation levels of SSA i.e. the dropout rates may alarmingly increase.
2. The MDMS is a direct attack on malnutrition and hunger of the children of school going age.
3. The MDMS is an attempt to improve community participation and the patterns of interaction of

children with schools.

4. The National Institute of Public Cooperation & Child Development, Indore (2016) reports that the MDMS was very much helpful in improving the enrolment levels in primary schools in Madhya Pradesh

Controversies Related with MDMS

Though planned and implemented with noble causes the MDMS face several challenges in its action level

1. The Standing Committee on Human Resource Development with Chairperson Dr. Satyanarayan Jatiya constituted for making recommendations regarding the implementation of SSA and MDMS. The report submitted on December 15, 2016 which state that a diversion has occurred in the case of teachers and students from teaching learning activities affecting the quality indicators of education.
2. The Committee also pointed out that many state governments did not follow the instructions of Central government in delivering foodgrains which led to a failure in the provisioning of proper amount of nutrition to children.
3. Cases of misappropriation of funds, poor quality food grains, and poor administration have been reported from many states causing hurdles to realizing the goals of bringing maximum children to schools.

- **Gross Enrolment Ratio**

This can be defined as the total number of enrolments, without any age considerations, in the primary education (Grade I-V), as a percentage to the school age population of the corresponding age group.

- **Net Enrolment Ratio**

This can be defined as the total number of enrolments, of the official age group, in the primary education (Grade I-V), as a percentage to the school age population of the corresponding age group.

Table 7: GER and NER

Category	*2014-15*	*2015-16*
Gross Enrolment Ratio (primary level)	100.08	99.21
Net Enrolment Ratio (primary level)	87.41	87.30

Source: ELEMENTARY EDUCATION IN INDIA Progress towards UEE, Flash Statistics U-DISE 2015- 16, NUEPA

The gross enrolment ratio as well as the net enrolment ratio shows a slight decline mainly because of the variations taking place in different states, causing a dip in the national average. It is the top priority of the governments to bring the net enrolment ratio closer to 100%.

- **Average Drop-out Rates**

This refers to the figure of grade specific dropping out of students in the primary grades who don't move further in the education ladder.

Table 8: Average Drop-out Rates

Category	*2012-13*	*2013-14*	*2014-15*	*2015-16*	*2016-17*
Drop-out rate (elementary level)	4.67	4.34	4.13	4.10	6.12

Source: SCHOOL EDUCATION IN INDIA, U-DISE Flash Statistics 2016-17, NIEPA

Drop-out Rates: The Real Education Challenge

The drop-out rates in the country have shown a declining trend over the years upto 2015-16, but very recently the data published indicate a rise in the rates questioning the implementing capacity of the programs meant for universalizing elementary education. The near-to universal education attainment of the country actually hides two potential dangers within it i.e. high rate of drop-outs and low rates of attendance. There are mainly three challenges posed by the high drop-out rates:

- Issue of a loss in productivity levels in the provision of education since increase in the rate of drop-outs rises the per unit cost of extending education activities.
- According to the NUEPA study (2011), the contribution to the productivity levels of the society may decline due to the fact that the drop-outs will be engaged in semi skilled or unskilled employment avenues.
- Increased rates of drop-outs directly have inverse impact on the achievement levels of the SSA as one of the founding stones of the SSA framework is to bring all the school going age children to the school and complete their education cycle.

Why Do Children Get Drop Out?

According to UNICEF report titled "Time to Take Stock, Time to Discuss RTE" out of 200 million children enrolled, 80 million children are likely to become dropouts before they complete elementary education. The ASER report 2016 in its study reported that only about three-fourths of enrolled children attended the primary or upper primary classes. The case was much more serious in BIMARU states which constitute 46% of the total child population in the country. ASER Centre's Middle School Study, which was conducted between 2013 and 2015 in Nalanda district in Bihar and Satara district in Maharashtra found that lack of interest and issues of access were the main reasons behind the alarming rates of dropouts in those states. The reasons for drop-outs thus vary from state to state as well as within state itself. Domestic chores, lack of interest, financial constraints, issues of accessibility and proximity, lack of adequate infrastructure etc become general reasons behind children becoming drop-outs

Challenges to be Addressed

- Social inclusiveness should be developed to the core so that all the sections of the society become able to send their children to the schools irrespective of any sort of differences.

- The awareness campaigns by the governments should be carried forward in a more rigorous manner by the local self governments so that the public become more aware about the public education protection initiatives.
- Special schemes like Beti Bachao Beti Padhao etc should be strengthened so that the drop-out ratio among girl children can be particularly tackled.
- The nationwide flagship programs are highly beneficial in providing the needed infrastructure facilities and amenities in schools. These schemes should continue to strive for betterment in teacher quality, training programs, community participation and achievement levels.

Conclusion

Faced with several policy challenges, the implementation of educational goals in a diverse nation like India is a tedious task to execute. One of such educational goal is the Education For All (EFA) initiated by UNESCO. India has come miles forward in extending quality primary education for the students regardless of age groups mainly due to the interventions made through the Sarva Shiksha Abhiyan and Mid Day Meal scheme. Even though issues like drop-out rates and absenteeism pose challenges in realizing the dreams, full thrust from the part of all levels of government mechanism concerned can help India to realize the sustainable development goals.

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Population Ageing in India: A Demographic Perspective

Twinkle Wilson C

Keywords: *Population, Elderly, Demographic Transition, Dependency Syndrome, Life Expectancy at Birth, Fertility Rate, Mortality Rate*

Abstract

In the 21st century, population ageing has a vast and influential significance in world economic scenario while dealing with issues of demographic growth, since it should be read in the context of demographic transition. It is said that India has the largest number of elderly people behind China in the World population. Considering Sax's four stage theory of demographic transition, India is at the far end of the third stage of demographic transition and is likely to get into the final stage by 2020. Since Independence, population growth has been accompanied by an increase in the number as well as the proportion of people aged 60 and above. That is, the increasing proportion of ageing population will reduce the proportion of economically active population and workforce. Consequently, the economic implications of population ageing cases to decline in work participation, mounts to dependency syndrome, rising health care needs, unsustainable growth in service pensions and provision of social security. Hence it is vital to examine the economic and demographic reasons of the rocketed Indian elderly population as it can be considered as a case study for the world population studies. Based on the secondary data, this paper attempts analyze the trend in elderly population and the demographic factors that contribute to ageing process in India.

Twinkle Wilson C, Ph.D. Research scholar, Department of Economics. Dr John Matthai Centre, Aranattukara, Kerala, India

Introduction

Population ageing is one of the important problems throughout the 21st century, because of the considerable increase in the absolute and relative number of aged people in developing countries. According to UNESCO estimate, population above 60 in the world in 1975 was 350 million, which is likely to rise by 590 million in 2005. By 2030 their number is estimated to rise by 1.4 billion. Before in time, UN has declared 1999 as the international year of older persons and October 1st is celebrated as aged people's day every year. And it has been estimated by UN that there is a gradual increase from 9.2 percentage in 1990 to 11.70 percentage in 2013 in the Global share of old people and is projected to continue to grow by 21 percentage of the total population of the world by 2050 (UN, 2013) . The number and proportions of older people continue to rise in developing country like India. India has the second largest number of elderly people after China. There was about 104 million elderly comprising 8.6 percent of the total population in India in 2011.

Age structural transition - a process and consequence of shifting age structure from young aged population to old aged population, is an integral part of a demographic transition whose trajectories are determined by the timing and speed of fertility and mortality rates. Based on the Sax's four stage theory of demographic transition, during the early stages of demographic transition, both fertility and mortality rates are high and constant resulting in a constant age structure. In the next stage, when mortality declines and fertility is constant, large share of countries population is young leading to a high dependency ratio. Later, when fertility starts declining, cohorts of high fertility regime move

into the working age leading to decline in dependency ratio. In the final stage of the demographic transition, both fertility and mortality reach the lowest level and the share of the old age start to increase. (Sax's four stage theory of demographic transition). India went through the 1st stage of demographic transition before 1920 and 2nd stage was witnessed during the period 1920- 1971. At present, India is at the far end of the 3rd stage of demographic transition and is likely to get into the final stage by 2020.

Objectives

1. To examine the trend and characteristics of elderly population in India
2. To identify the major demographic factors contributing to ageing process in India.

Methodology

The study has made use of secondary data sources like census reports of various years, sample registration system bulletin's, Human Development Reports, NSSO survey 2004-05, 2007-08.

Population Ageing in India: An Over View

The continuing population growth in India during the period after independence has been accompanied by a marked increase in the number of people aged 60 and above. According to the data available from the decennial census, the percent of the aged has been increasing at a steady rate. Much of the reason for the growth of India's elderly population is expected to comprise people with adverse life course experience clouded by excessive socio- economic backwardness. In response to the growing changes in age composition and faster ageing, the central and state governments in India have adopted a set of policy initiatives to help the elderly people.

Table 1: Percentage Share of Elderly Population (Aged 60 Years and Above) in Total Population by Sex in India

Years	*Male*	*Female*	*Total*	*Rural*	*Urban*
1961	5.5	5.8	5.6	5.8	4.7
1971	5.9	6.0	6.0	6.2	5.0
1981	6.4	6.6	6.5	6.8	5.4
1991	6.7	6.8	6.8	7.1	5.7
2001	7.1	7.8	7.5	7.7	6.7
2011	7.7	8.4	8.6	8.1	7.9
2004-05*	6.9	7.5	7.2	7.3	7.0
2007-08*	7.3	7.7	7.5	7.6	7.2

Source: Census of India for 1961-2001, NSSO Survey 2004-05 and 2007-08,

* SRS (Sample Registration System) Statistical Report 2011

The growth rate of elderly was increasing over the years; it was 5.6 percent in 1961 and by 2011,

it increased to 8.6 percent. Improved life expectancy has contributed to an increase in the number of people in the age group of 60 +. According to the Census of India, ageing scenario also differs from rural to urban India. Gender is an important determining factor for the steady wellbeing of the society. India is regarded as one of the countries in the world where men outnumbered women at all ages till old-old age. One of the main social effects of extension of life in later life is the extended period of widowhood for women. Widowhood often lowers the socio-economic level of women. And illiteracy or poor education becomes the barrier for their economic and social security. Growth rate of elderly is quite higher in rural areas when compared with that of urban areas. Due to rapid urbanization from 1990's onwards in India, urban dwellers became more in number that also affects the living condition of elderly population in India. As a result, elderly population is more in rural India than urban areas

Table 2: Number and Proportion of Elderly in the Indian Population by Age-Groups, 1961-2001.

Age groups	*Number (in millions)*				
	1961	*1971*	*1981*	*1991*	*2001*
60+	25	33	43	57	77
70+	9	11	15	21	29
80+	2.51	3.71	4.71	7.01	8

Source: Census of India for the period 1961-2001

Ageing is generally defined as population above 60 years of age. Demographers also define the old in three categories; young- old (60+), old-old (70+), and oldest- old (80+). Among them, the proportion of young - old group to total population is high as compared to70+ and 80+ populations, because of the increasing number of median age group (working age population) of Indian population. The elderly population in the old-old group was only 9 million in 1961 that rose about 29 million in 2001. In 2001, the population of the 80+ age group increased to over 8 million who were of major concern in our society. The 80+ population was less than the other two groups because of high age - specific death rates of old-old group. The volume of supportive socio-economic and emotional infrastructure needed for this fast growing population is huge and it's a big challenge for the planners in the years to come.

Table 3: Size of Elderly Population (aged 60+) and Their Share in Total Population in States And union Territories.

States/ UTs	*Percentage of elderly people in total population of State/UTs*	*States/ UTs*	*Percentage of elderly people in total population of State/UTs*
Andhra Pradesh	9.8	Kerala	12.6
A & N Islands	6.7	Lakshadweep	8.2
Arunachal Pradesh	4.6	Madhya Pradesh	7.9
Assam	6.7	Maharashtra	9.9

States/ UTs	*Percentage of elderly people in total population of State/UTs*	*States/ UTs*	*Percentage of elderly people in total population of State/UTs*
Bihar	7.4	Manipur*	7.0
Chandigarh	6.4	Meghalaya	4.7
Chhattisgarh	7.8	Mizoram	6.3
Daman & Diu	4.7	Nagaland	5.2
Dadra & Nagar Haveli	4.0	Odisha	9.5
Delhi	6.8	Puducherry	9.7
Goa	11.2	Punjab	10.3
Gujarat	7.9	Rajasthan	7.5
Haryana	8.7	Sikkim	6.7
Himachal Pradesh	10.2	Tamil Nadu	10.4
Jammu &Kashmir	7.4	Tripura	7.9
Jharkhand	7.1	Uttar Pradesh	7.7
Karnataka	7.7	Uttarakhand	8.9
West Bengal	8.5	India*	8.6

Source: Population Census 2011

***** The figures include the estimated population of Mao Maram, Paomata and Purul sub-divisions of Senapati district of Manipur. (Note: Totals may not match due to rounding off error.)

From 1980's onwards, demographers began to focus on ageing. Dr. Paul Nash (2014) said "ageing is integral to everything in economic society." Among all the Indian States, Kerala is holding the maximum proportion of elderly in its population (12.6 percentage) which is followed by Goa (11.2 percentage) and Tamil Nadu (10.4 percentage) and is estimated to be the least in Dadra and Nagger Haveli (4 percentage) in Census 2011. And the growth rate among the aged is increasing higher and higher.

Factors Contributing to Ageing Process in India

In India elderly is the byproduct of demographic transition, and it is elsewhere. The demographic transition process in India has brought about significant decline in mortality and reduction in fertility rates. Better health care sharp decrease in mortality resulting a increase in life expectancy at birth. The factors contributing to ageing process are:

Trends of Growth of Population and Age Composition in India

India is considered to be a rich country with poor people. Today India possesses about 17.64

percent of the world population. The growth rate of India's population as:

Table 4: Population And Its Growth from 1911 to 2011

Census years	*Population (in lakhs)*	*Decadal growth rate*	*Age groups(percentage)*		
			0-14	15-60	60 and above
1911	2520.90	5.75	38.8	60.2	1.0
1921	2513.20	-0.31	39.2	59.6	1.2
1931	2789.80	11.00	39.3	60.2	1.5
1941	3186.60	14.22	37.4	57	5.5
1951	3610.90	13.31	41.0	53	5.7
1961	4392.30	21.64	41.0	53.3	5.7
1971	5481.60	24.80	41.4	53.4	5.2
1981	6833.30	24.66	39.7	54.1	6.2
1991	8433.90	23.86	36.5	57.1	6.4
2001	10270.20	21.34	35.3	56.9	7.5
2011	12101.93	17.7	29.5	62.5	8.6

Source: Census of India reports 2011

An analysis of the decadal growth rate of all India population showed an increase from the year 1921 to 1981 and since then the rate of growth started declining. Young age population showed an increasing trend up to 1971. But it has started declining from 1981 onwards reaching 29.5 percent in 2011. The study of age composition is helpful in determining the proportion of the labour force in the total population and also the dependency ratio. A high proportion of children only reflect a large proportion of unproductive consumers. To reduce it, it is essentials to bring down the birth rate. Working age population which was very high in the early periods declined to 53.3 percent in 1961, but since then it started increasing and reached 62.5 percent in 2011.

The percentage of population above 60 was very low at one percent in 1911 which increased to 1.5 percent in 1931Based on the census report, elderly population has been marked a steady increase in the total Indian population since 1961. . But in 2011 the percentage of elderly population was 8.6 percent.

Fertility Rates in India.

Table 5: Fertility Rates of India (1961-2011)

Census years	*General fertility rate*	*Gross reproduction rate*	*Total fertility rate*
1971	161.1	2.5	5.2
1981	140.9	2.2	4.5
1991	119.2	1.7	3.6

Census years	*General fertility rate*	*Gross reproduction rate*	*Total fertility rate*
2001	-	-	3.2
2011	81.2	1.2	2.4

Source: Census of India reports

The total fertility rates (TFR) is defined as the average expected number of children to be borne by women during her entire reproductive span under a given schedule of fertility. The total fertility rate for India was 5.2 in 1971, which declined to 2.4 in 2011 and is projected to 2.6 in 2021. However, the fertility rate in India is still high as compared to the world average of 3.0 children per women.

Life Expectancy at Birth in India

Table 6: Life Expectancy at Birth and Sex Ratio in India.

Census years	*Male*	*Female*	*Sex ratio*
1921	19.4	20.9	955
1931	26.9	26.9	950
1941	32.1	31.4	945
1951	32.4	31.7	946
1961	41.9	40.6	941
1971	47.1	45.6	930
1981	54.1	54.7	934
1991	59.4	60.4	927
2001	63.6	64.2	933
2011	67.3	69.6	943

Source: Census of India reports

It is very clear that the life expectancy at birth among the males and females are increasing year by year. Whereas, the life expectancy at birth among males is lower as compared to females and a similar difference is expected in future too. The increasing life expectancy at birth is believed to be one reason for the increasing percentage of elderly people in the country. Sex ratio is defined as the number of females per thousand males. In India, sex ratio has generally been considered adverse to women. In Indian context, a sex ratio of 950 and above can be considered as favorable to females.

Mortality Indicators in India

One of the factors for depressing life expectancy was the high level of infant mortality rate. Infant mortality rate (IMR) is the number of deaths per 1000 live births of children under one year age.

Table 7: Mortality Rates in India (1971-2011)

Census years	*Crude death rates*	*Infant mortality rates*	*Child mortality rates*
1971	14.9	129	51.9
1981	12.5	110	41.2
2001	8.4	66	26.5
2011	7.1	44	12.2

Source: sample registration system.

All the mortality indicators in India shows a sharp decline through various census years, due to the increasing health protecting measures taken by the government of India. But it causes increasing life expectancy at birth for an elderly, otherwise rising proportion of elderly in India. This significant change is pushed life expectancy but still it does not compare favorably with the level obtained in other countries of the world

Human Development Index (HDI)

The HDI is a measure for assessing countries progress in the three basic dimensions of human development: a long and healthy life (life expectancy), access to knowledge (literacy rate), access to income for decent standard of living.

Table 8: Human Development Index (HDI) Trends in India (1990-2015)

Years	*Human development index(HDI)*
1990	0.428
2000	0.494
2010	0.580
2011	0.590
2012	0.599
2013	0.607
2014	0.615
2015	0.624

Source: United Nations Development Programme (UNDP), human development report's

Human development index (HDI) has shown an increasing trend throughout years. India's HDI value was increased from 0.428 in 1990 to 0.624 in 2015. According to HDI report 2015, India ranked 130th position with value 0.624 and was placed in the medium human development category. However, its average annual growth in HDI (1990 - 2015) was1.52 which was higher than that of other medium HDI countries. And the reason behind this is the rise in life expectancy and per capita income.

Dependency Ratio and Index of Ageing

As population age increases, supply and demand issues are also created. It has been clearly seen that the elderly ratio places different demands on support system than the non- elderly. The size and proportion of the population under 15 years of age are more directly affected by recent fertility changes. And change in old age mortality has directly influenced the population aged 60 years and above. The comparison of proportion of both indicates which age group is dominant and whether the trend is one of venation of ageing.

Table 9: Dependency Ratio and Index of Ageing (1961-2011)

Years	*Dependency ratio*		*Index of ageing*
	Old age	*Young age*	
1961	10.9	-	-
1971	11.5	-	-
1981	12.0	-	-
1991	12.2	-	-
2001	13.1	50.94	1.35
2011	14.2	51.0	2.71

Source: Census of India reports, Register general of India

Index of ageing is defined as the proportion of population in the age group of 60 years to the population aged 0-14 years multiplied by 100. It is regarded as a common measurement to understand the ageing process. The increasing old age dependency ratio will reduce the young age dependency in the future. Because index of ageing shows a gradual increase to 2.71, which means that the upper limit of elderly population is increasing naturally.

Conclusion

At present, population ageing is occurring throughout the world. Two thirds of the world's elderly populations live in the developing countries, where their numbers are growing faster than in the developed countries. In 2050, it is expected that nearly 8 in 10 of the world's elderly people will be living in the developing countries (UN2013). India is one of the developing nations with high amount of people above 60. In the trends of world population, India is considered to be a mirror image of elderly population studies, which reveals through various census reports.

Based on the census reports, one can conclude the present study examinations on the demographic characteristics of Indian elderly as:

- A crisis that is overlooking for India due to the increasing nature of elderly population.
- Indian demographic characteristics like high birth rates, low sex ratio, low literacy rate, decline of mortality rate, increasing old age dependency, high life expectancy, and declining infant mortality rate have resulted the steady growth of the Indian elderly in near future.

- The growth rate of elderly is increasing over the census years in faster way, which results zero population growth rate in 2020.
- By a gender-wise analysis, it is noted that elderly growth of females are more than their male counterparts. And elderly population is more in rural India than urban areas which results the increasing number of widows than widowers in rural India.60+ populations are increasing due to a large amount of medium age group (working age population) and 80+ population groups is less due to high age- specific death rates.
- According to 2011 Census, Kerala is holding the highest and Dara Nagar Haveli holds the lowest elderly population in India.
- According to the HDI report 2015 report, HDI value of India is increasing due to rise in life expectancy and per capita income.

In a nutshell, regarding the consequence of population growth on development, the above facts of Indian demography is noteworthy feature on world population aging studies .

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M-Learning Studies in the Indian Context in the Past Decade - Challenges and Solutions: A Review

Suja Bennet and Praveen R

Keywords: *M-Learning, Information Communication and Technology, Education Processes, Challenges, Solution.*

Abstract

Educational institutions of a majority of developed countries have a clear understanding of the benefits of mobile devices based learning (m-learning), and have even begun using the same, not only for distance learning, but in regular classrooms as well. Although developing nations like India, with a massive student population and numerous centres of learning are gradually adopting the information communication and technology (ICT) based education processes, strides in m-learning have been slow. The aims of this study are threefold: to assess the current scenario of m-learning utilization, to enumerate the challenges in this regard, and to review solutions for promoting the adoption of m-learning. Literature pertaining to research conducted over the last decade with regard to m-learning issues, challenges, and solutions has been reviewed. Despite the rapid evolution of m-learning, the review has revealed that the promotion of m-learning is still a challenging affair.

Suja Bennet, Research Scholar,CMR University, Bangalore, Karnataka, India

Dr Praveen R, Registrar, CMR University, Bangalore, Karnataka, India

1. Introduction

Technology has brought about a sea change in the way information is accessed and used (Gokhale and Bhakhare, 2011). Learning and technology are now strongly interdependent and linked and mobile technologies have shown tremendous potential of effectuating changes in the approach to education in India (Deshpande et al., 2018). Mobile instruments and applications could be utilized in the classroom for improving learning experiences, which could revolutionize the education system. Mobile devices comprise basic cell phones on one end and internet enabled advanced tablets on the other (Gangaimaran and Pasupathi, 2017; Sagar, 2013). Integrating mobile technologies in learning is referred to as m-learning and it entails providing educational services to the students electronically, enabling them to acquire knowledge irrespective of their location. Further, M-learning could also be defined as the learning which takes place when the learner is at different locations or learning which occurs through mobile technologies (Fouzdar and Behera, 2017). However, m-learning cannot be seen merely in the light of the terms 'mobile' and 'learning' as its implied meaning has always been 'mobile e-Learning', a methodology which developed as an extension of e-Learning (Gnana et al., 2017). The differences between e- and m-learning are presented in Table 1 (Mehdipour and Zerehkafi, 2013).

Table 1: Differences between E- and M-learning

Subject	*E-Learning*	*M-Learning*
Place	Lectures occur in labs or classrooms with internet facility	Occur anytime, anywhere
Pedagogical variation	More text and graphic content	More voice, animation, and graphic based content
Communication between instructor and student	Delayed communication (emails or websites need frequent checking)	Instant communication through SMS/ email.
	Communication is passive	Communication is instant
	No synchronicity	High synchronicity
	Communication is scheduled, i.e., planned beforehand	Communication is spontaneous
Communication between	Face-to-Face	Flexible
students	Audio teleconferencing	Both video and audio teleconferencing
	Email exchanges	Instant 24/7 messages
	Location is private	Geographic boundaries do not matter
	Requires time to travel to the internet location	Wireless internet connectivity ensures nil travel time
	Group meetings occur at fixed times	Meeting time can be flexible, i.e., 24/7
	Communication could be poor owing to group consciousness	The communication will be better as it will be one-on-one, hence no inhibitions
Student feedback	One-to-one basis	One-to-one basis
	Not synchronized, with occasional delays	Could be both synchronized and non synchronized
	Standardized lessons	Customized lessons
	Benchmark-oriented grading	Performance and progress-oriented grading
	Simulated and laboratory experiments	Reality-based, on-site experiments
	Paper is used	Paperless, hence less printing, i.e., low cost
Assignments/Tests	Classroom or computer-based	Anywhere
	Fixed time	24/7 and instantaneous
	Time limited	No limit
	Standardized test	Customized tests
	Feedback is generally delayed	Feedback is instant
	Length of the tests is fixed	Test length is flexible

Subject	*E-Learning*	*M-Learning*
Exams/ Presentations/ Assignments	Theory and textbook-based	Practice-based exams, directly on-site and hands-on
	Laboratory observation and monitoring	Field observation and remote monitoring
	Classroom-based presentations	One-to-one presentations which make communication richer
	Single language-based assignments/ instructions	Automatic translation of instructions in several languages
	Customized component-based group tasks	Simultaneous joint group tasks
	Paper-based delivery of assignments	E- delivery of assignments
	Delivery of assignments by hand at a fixed time and location	E-delivery at any time irrespective of the location
	Teacher's time utilized for lectures	Teacher's time utilized for individual attention and help

The mobility factor of m-learning distinguishes it from other kinds of learning, along with the accompanying specifically designed learning methods. M-Learning is thus based on the learner's mobility and interactions with mobile devices with features and functionalities which support learning, such as lecture podcasts which can be downloaded on the mobile phone (Joshi and Bansal, 2017). Learners are expected to utilize such learning resources while being away from traditional classrooms (Pawar, 2016). In the past decade, m-learning has progressed from a minor research topic to a major project in workplaces, schools, and other learning centres (Miranda and Francis, 2009). However, the m-learning communities are still disorganized with differing perspectives nationally and across industry and academia (Singh, 2010).

India, which has a massive student presence along with a large number of educational institutions and universities is moving ahead with regard to the ICT based education methodology, but has limited m-learning facilities (Sampangi et al., 2010; Datta and Mitra, 2010). However, there have been developments in this regard in the recent times, wherein some universities, such as Sikkim Manipal University have deployed tablet devices for some of their distance learning courses (Pal et al., 2014). Further, in order to promote ICT for quality education, the Ministry of Human Resources Development, Government of India (GoI), has launched Aakash, a project under the National Mission in Education through ICT (NMEICT), which focuses on developing and deploying m-learning tools through Aakash m-tablets. These tablets have been provided free of cost to different engineering institutes to evaluate and improve the effectiveness of routine classroom learning and to develop novel educational content. M-Learning has made particularly significant progress with regard to Open and Distance Learning (ODL) and has gained acceptance by teachers and students alike (Bozkurt et al., 2017; Nehru and Bennet, 2014). India rural population is significantly higher, i.e., about 66.5% of the total population (India Demographics Profile, 2018) and ODL approach could prove critical in imparting education to people in remote areas by incorporating mobile technology. India has about 960 million cell phone users, i.e., a 77.5% penetration rate

(TRAI, 2015), of which 200 million users possess smart phones (MoEA, 2015). In this context, M-learning, can be considered a relevant and promising means for furthering the ODL system in India (Awadhiya and Miglani, 2016).

The objectives of the present study are as follows:

1. To summarize the current state of knowledge of m-learning surveys among Indian educational institutions,
2. To identify the important issues in the adoption of m-learning,
3. To summarize the impact of adoption issues on on m-learning.

Further, the rest of the paper is divided into five sections, wherein Section 2 describes the methodology adopted, Section 3 reviews the research conducted in the past decade, Section 4 describes the findings of those research articles and Section 5 summarizes and concludes the study.

2. Methodology

The present paper is a review of the research studies pertaining to m-learning in India, which covered literature from a range of information systems, such as journals, books and conference proceedings. Published research articles on m-learning were searched using databases like Emerald Insight, Science Direct, IEEE, Taylor & Francis, Inderscience, Wiley, etc., using many relevant keywords. Further, the Google Scholar search engine was used to find literature which were not available through these databases. The 57 papers so identified represented a broad spectrum of educational, mainly peer-reviewed journals. The findings and contribution of the reviewed studies were presented year-wise and the key issues affecting the adoption of m-learning are extracted and discussed. Finally the conclusions are drawn based on the results obtained.

3. Classification of the Collected Data

The research literature pertaining to the last decade, which were collected and reviewed are presented yearwise in Fig 1.

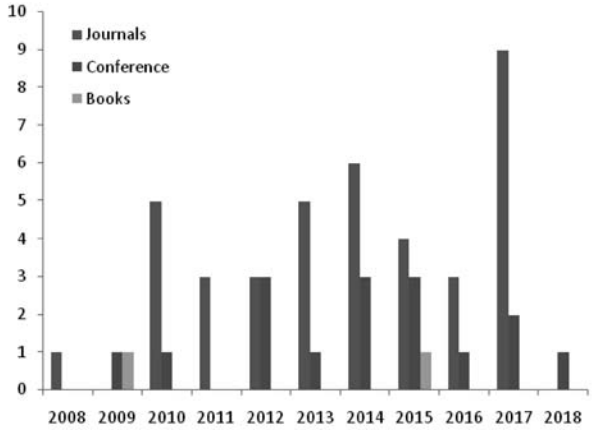

Figure 1: Yearwise Distribution of Literature

This paper has focused on research studies undertaken on m-learning after 2009, which have been presented the important categories observed over the last decade (2008-2018). The data presented in Table 2 shows that in the last decade, there has been a significant increase in the number of research papers on m-learning. Additionally, the research activity was the highest in the years 2014 and 2017.

Further, among the reviewed articles, 25 were descriptive in nature which dealt with the benefits and challenges of m-learning and the rest were experimental studies which covered mobile applications and cloud computing solutions. Authorwise details of some of the reviewed research articles are presented in Table 2.

Table 2: Authorwise Research Studies on M-learning in the Last decade

Author and Year	*Research Approach*	*Subject Matter*	*Scope of the paper*
Pal et al., 2014	Survey, descriptive	Feasibility analysis of m-learning	Engineering colleges of Kolkata
Rajasingham, 2011	Descriptive	Challenges of e- and m-learning	Global developments
Acharya and Sinha, 2013	Descriptive and experimental	Testing the quality of m-learning systems using ISO/IEC 25010	Purely technical aspects of m-learning framework
Kaur, 2017	Descriptive	Present status, benefits and issues of m-learning	M-learning in the Indian education system.
Yadava and Chaudhary 2017	Descriptive	Study of factors enabling m-learning	Mobile users- Students, professionals and entrepreneurs
Akshay et al., 2012	Experimental	Testing e-learning and m-learning models for rural areas	Schools in rural and tribal areas
Yedla, 2013	Descriptive	A study of m-learning modules for learning English	University and professiona college level students
Pawar, 2016	Descriptive	Study of opportunities and challenges of m-learning	School teachers and students in Pune
Prasad and Aithal, 2017	Descriptive and experimental	Testing a GPS enabled m-learning module and its advantages	M-learning modules in universities
Singh et al., 2017	Experimental	Testing an M-learning application for students	Engineering college students

4. Discussion

This section discusses in detail the findings of the research studies on m-learning carried out in the past decade. Teachers can use the m-learning methods to enhance the learning and teaching methods as the tools are collaborative, competitive, and cooperative (Baruah, 2015). M-learning benefits education in numerous ways and facilitates anywhere and anytime learning with geographical boundaries (Pal et al., 2013; Kumar and Pilli, 2012) owing to instant communication through e-mails and SMSs. Further, owing to easy access to video and audio conferencing, students can learn from their locations at their own pace with no fixed timings and no time spent on travelling (Kam et al., 2009). One-on-one interaction between the instructors and students improves the

quality of communication (Maithra and Kuntagod, 2013). Another advantage is that the mobile devices are cheaper than laptops or desktops and multimedia content can be created and delivered at lower costs (Srithar and Selvaraj, 2015). Further, M-learning facilitates effective teaching and improves learning outcomes and learner performance by facilitating superior student engagement (Lakshmi and Nageswari, 2015). It will be especially beneficial to learners enrolled in distance education initiatives as they can access expert opinions, lecture summaries, educational content, and assignments through their mobile phones (Vishwakarma, 2015; Singh et al., 2017). Notwithstanding its benefits to teachers, students and the learning process, m-learning also poses a number of challenges (Yadava and Chaudhary, 2017), which are discussed in the ensuing paragraphs.

Management Challenges

In order to implement m-learning on a large scale, managements of educational institutions need to put in place unambiguous policies with regard to pedagogical and technical support (Viswakarma, 2015). The limitations in the managerial policies and support to m-learning are considered institutional hurdles. A key challenge faced by educational organizations while implementing m-learning is the management of internal change in the institution. Institutional activities, processes and components along with the personnel, i.e., decision makers, managers, students, instructors, etc. are expected to undergo substantial changes (Valk, et al., 2010). Therefore, change management has to be undertaken systematically for successful implementation of m-learning, which should ideally begin with detailed advance planning. The main aim of the process of change is to alter the behavioural attitudes across various levels, i.e., individual and organizational layers (Vyas and Nirban, 2014). The adoption of the m-learning strategy, being a big change, naturally causes resistance and employing change management methods is therefore beneficial to everyone (Shank et al., 2007).

Pedagogical Challenges

Seamless integration of technology in education is a challenge which necessitates proper consideration of learning and teaching strategies (Singh, 2010). The principal driver of m-learning innovation should not be a mere deployment of technology, but should involve the integration of new methodologies and pedagogy (Rajput and Thakur, 2014). New learning methods and design guidelines are necessary for the successful application of mobile technologies in education, which calls for the development of suitable pedagogical methods (Pal et al., 2014). Further, major efforts have been made to bring about the integration of mobile devices with learning and teaching practices (Fouzdar and Behera, 2017).

Design Challenges

Nowadays, mobile devices come with a variety of features, such as cameras, video/audio recorders and location sensors, calculators, media players, etc (Prasad and Aithal, 2017). A detailed study of such features could help designers in understanding the potential of m-learning with special regard to social and informal learning models (Rajasingham, 2011). M-learning application designers must be familiar with three kinds of designing, namely, designing instructions or the educational design of the application; designing interfaces; and designing screens, which is related to visual display and graphics (Singh et al., 2017). By focusing specifically on these three functions, an interactive and useful m-learning application can be obtained (Acharya and Sinha, 2013).

Technical Challenges

On the technical front, there can be issues regarding connectivity and battery life, screen and key size, bandwidth for rapid streaming, and formats/file compatibility (Kaur, 2017). Along with the issues copyrights and multiplicity of standards, screen sizes, and operating systems, the existing e-learning system needs to be redesigned in order to be compatible with mobile platforms. Additionally, m-learning platforms also encounter the problem of limited memory and the risk of frequent system obsolescence, which poses significant challenge for their implementation (Baruah, 2015).

Solutions Suggested

Mobile Applications

One of the immediate requirements with regard to m-learning is an adaptive learning system (Subramanian and Rajkumar, 2016) which would facilitate learning and assessment on both mobile devices (m-learning) and personal computers (e-learning), which was proposed by Nedungadi and Raman (2012). The aim of this application was to enable students to easily switch between the two learning genres according to their convenience. The platform provided customized assessment according to individual requirements for both forms of learning. The study intended to establish that the functionality of e-learning was retained in the m-learning scenario as well, and aimed to understand differences in the user experience. The results indicated that the students were able to conveniently switch between the two systems without any tangible change in learning outcomes, which strengthened the demand for an adaptive learning platform.

Another example regarding the integration of portability and mobility is the Sakshat Amrita Vocational Education (SAVE) platform elaborated by Akshay et al. (2012). This platform includes the advantages of self-paced learning, flexible class hours, and interactive learning. Additionally, the cost of study tools and material is reduced and the physical presence of the teacher is not necessary. It also has the potential for standardizing vocational education and training (VET) course content throughout India, thereby offering a scalable solution for VET delivery and establishing computer-based assessment techniques. The results of the study proved that the m-learning applications can be successfully employed to provide user-driven vocational training in tribal and rural areas. It was tested on a small population with limited formal education and they were able to learn certain vocational skills through the user-driven ICT-based techniques. This proved the potential of m-learning in skill building, and boosting confidence, trust, and social acceptance.

The prospects of an m-learning based pedagogy was explored by Nendugudi et al. (2014) using a low cost tablet (LCT) for improving elimentary reading in classrooms in the tribal areas of Kerala. The LCT was found to be useful in imparting education in areas with limited qualified teachers and resources. The study observed that while younger children were unable to read, middle school students found reading comprehension and mathematics challenging. The study found that owing t0 the simplicity and the touch screen interface of the LCTs, students were able learn using them without any formal training and enjoyed repeating the lessons. Further, instructors were also trained to use LCTs to improve the reading skills of children. The findings found LCT to be a strong motivator for education and has vast potential for addressing the problems of school dropouts.

Similarly, an m-learning platform which enabled anytime, anywhere and any device learning was designed by Muthukumarasamy (2013). This platform was considered from a technological, pedagogical, and usability perspective and was based on a web-service oriented open architecture. The m-learning platform was developed using a learner-centric method and a just-in-time environment for learning and the mobile enabled language learning applications (MALL/MELL) built using push notifications, improved learning by eliminating the need to search feedback, updated content and uploaded messages from the instructors. This MALL application was found to encourage the learners by instantly notifying them about new exercises, learning content, feedback, etc. Further, the 'push' model reduced battery usage, costs of accessing data and learners' 'pull' effort and thus enhanced the learning experience.

Cloud Computing

Learning through a mobile cloud computing (MCC) platform has many advantages over the conventional m-learning methods (Goyal and Singh, 2014). Firstly, MCC extends the battery life of mobile devices by offloading complex processes and computations to high-resource servers in the cloud (Mallya and Dhas, 2016). Further, it also helps save power by reducing the extra power consuming application execution duration on mobile devices. Secondly, the data storage and processing capability is enhanced as all the data is uploaded and processed in the cloud (Verma et al., 2017). Finally, reliability is enhanced as the application and the data are stored with a back-up on several cloud computers, thereby minimizing the possibility of data loss (Verma et al., 2012)

Cloud computing technology can potentially overcome the issues of m-learning and offer customized, reliable and dynamic computing (Bhosale and Livingston, 2014; Misra, 2012). Kartheeban and Venkatesulu (2015) presented a novel and cost-effective encryption algorithm called the Masking Based Bit XoRing (MBBXOR) for securely encrypting the mobile-based distance learning information and enabling streaming in a cloud computing setting. The input file is divided into smaller component files, I, B, and P frames, which are encrypted using MBBXOR for secure storage and decrypted as and when necessary.

Another major hurdle for the implementation of cloud-based m-Learning is data security (Verma et al., 2017). In order to address this issue, Mallya and Dhas (2016) developed an android application, MobiLearner wherein a client connects to the cloud, which is a local server placed on a desktop system. Two MobiLearner application versions were developed to compare authentication scheme performance, wherein the first one used the basic password validation and the second used the keystroke length validation technique. On testing both, the keystroke length validation method authenticated both keystroke length and password and offered a kind of twofold validation system that enhanced security. Thus, the proposed technique offered additional security and without compromising on user convenience at the same time.

Another cloud computation based m-learning platform was presented by Kumar and Pilli (2012), where service was provided by a software service. Learners can browse through the digital content anytime and anywhere in a transparent manner in the cloud space shared with the m-learning platform. They also explained the necessary components required to create a cloud based m-learning environment at different layers. It was found that the cloud computing platform integrates the benefits of shared information space with that of a basic physical set up in a secure manner at lower costs.

Another attempt of overcoming the limitations of m-learning platforms was made by Bhosale and Livingston (2014) who developed a novel m-learning architecture in an MCC environment, using wireless and mobile computing technologies. The proposed architecture was found to be useful for educational institutions with different learning methods in terms of knowledge sharing and distance learning. The architecture was based on the offloading method and included virtual network computing and remote access protocol. The m-learning application ran on a remote desktop server using the concept of offloading and the clients/devices were connected to the network by wireless connections such as Wi-Fi, 3G cellular radio, bluetooth, etc.

5. Conclusion

So far, there has not been any communication device which is as popular as the cell/mobile phone and it is natural that users seek novel ways to use these handheld devices for educational purposes (Viswanathan and Blom, 2010). At present, m-learning is yet to realise its peak potential and the divide between the options and application is apparent. While various digital formats of learning materials are readily available, the use of mobile phones for education is still not prolific as their small screens and input related difficulties discourage the users (Yedla, 2013). Therefore, mere technology cannot popularize m-learning and it requires an understanding of the learners' issues and an identification of what would influence a student to readily embrace m-learning (Baruah, 2015). One of the advantages of m-learning is that it enables learning through mobile devices, away from workstations or classrooms. Besides, m-learning also needs to be accessible and affordable in the context of developing nations like India (Awadhiya and Miglani, 2016). The potential of m-learning technology needs to be considered in the context of an ongoing change in the learning culture of the country with new developments redefining the old methods (Gnana et al., 2017). In this paper, important research studies on m-learning conducted in the Indian context over the past decade have been reviewed. The paper summarizes the advantages and challenges of m-learning as perceived by research scholars and has also suggested plausible solutions to those challenges.

The adoption of m-learning in educational institutions needs to be promoted by creating a conducive environment. Policy makers must help in developing a platform for instructional design and pedagogically suitable content to facilitate m-learning. Developing an efficacious m-learning policy would not only assist in solving the external issues, but would also help in addressing intrinsic challenges to the adoption of m-learning. Further, in order to effectively implement m-learning, institutions must address the technical, managerial, pedagogical and design related challenges. The paper also suggests some solutions to these challenges, such as mobile applications and MCC. Future research studies should focus on designing low cost, secure and interoperable m-learning platforms suitable for implementation in developing countries with large student populations and on suggesting the policy level changes that need to be brought about in order facilitate adoption of m-learning.

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Organizational Learning and Information Technology Adoption Research: A Review

G.N. Ramachandran and Dolphy M. Abraham

Keywords: *Information Technology Adoption, Bloom's Taxonomy, Individual Learning, Organizational Learning*

Abstract

A review of the literature on Organizational Learning highlights the linkages of Organizational Learning Processes to that of Individual Learning Processes. Literature on Information Technology (IT) Adoption and the popular Technology Adoption models reveals the paramount role played by Knowledge in IT Adoption decisions. Building on this analysis we explore the connection of a firm's learning with the level of learning in Bloom's Taxonomy of Knowledge and its relevance to Organizational Technology Adoption decision making process. We discuss the implications for future Information Technology Adoption research based on Organizational Knowledge Management constructs.

G.N. Ramachandran, PhD Student, Alliance University School of Business, Bangalore, Karnataka, India

Dolphy M. Abraham, Independent Researcher, Bangalore, Karnataka, India

1. Introduction

While Technology adoption remains a widely studied area in IS Research, decisions to adopt innovative and complex new technologies remain a challenge for Organizations, and there is a need to find answers to important questions in this area of research.

Organizational Learning and Organizational Knowledge Management have elicited enormous interest in social science research in the past few decades. This interest stems from the fact that the society that we live in is progressively turning into a "knowledge society" (Nonaka 1994). From organizational perspective, questions regarding how organizations create and process knowledge and how this knowledge enables them to understand problems and create and apply innovative solutions to solve them, have been widely researched upon.

Review of prior research reveals that Organizational Learning and Organizational Knowledge is a significant predictor of a firm's ability to innovate, ability to adapt to changing environment and retain competitive advantage. A careful review of the popular Information Technology Adoption models reveals the quintessential role being played by Knowledge about the focal technology in such IT adoption decisions by Organizations.

From the knowledge perspective, Bloom's taxonomy of educational objectives defines six major categories in the cognitive domain namely Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation and three levels

of knowledge as Factual, Conceptual and Procedural (Bloom et al 1956). It was revisited by Anderson et al (2001) who revised the same by changing the names from noun to verb forms and rearranging the same as Remembering, Understanding, Applying, Analyzing, Evaluating and Creating. They also introduced another level of knowledge - Metacognitive.

Building on the above analysis, we probe the role of Prior Knowledge and a firm's Organizational Knowledge Management processes in fostering its intentions to adopt complex IT Innovations like Cloud Computing.

The purpose of this paper is to review the existing Technology Adoption literature and answer the following questions: What is the role being played by Organizational Knowledge in its Innovative Technology adoption decisions? How Organizations gain such knowledge? The role being played by Knowledge in the popular Technology Adoption Theoretical framework? Based on our above review and findings, we summarize implications for future Information Technology Adoption research.

2. Organizational Learning

2.1 Organizational Learning Processes

Organizations Gain Knowledge through a set of Organizational Learning Processes. Levitt and March (1988) define the processes of Organizational Learning as: Learning from Direct Experience, Interpretation of Experience, Learning from the experience of others and Organizational memory. Reiterating Simon's (1969) definition, Levitt and March (1988) posit the key concept here as the Organizational Memory which survives even after the Individuals leave (along with their Individual memory) since Organizations record their experience and can retrieve their experience when needed. The importance of correct interpretation of past experience and, if not done, firms may learn incorrectly from non-beneficial past experience, was reinvestigated by Hotho et al (2015) while probing the mutual impact of global strategy and organizational learning. While reviewing Problemistic Search Theory, Posen et al (2017) also reiterate this importance of learning from experience and state that it is imperative for organizations to evaluate performance feedback and adjust organizational processes according to the feedback.

Huber (1991) redefines Organizational Learning Processes as: Knowledge Acquisition, Information Distribution, Information Interpretation and Organizational Memory. Knowledge Acquisition happens by Congenital Learning, Experiential Learning, Vicarious Learning, Grafting and Searching and Noticing. The Knowledge thus acquired gets distributed throughout the organization through sharing of knowledge. The Information Interpretation is impacted by Cognitive maps and framing, Media Richness, Information Overload and Unlearning. Organizational Memory denotes Storing and Retrieval of information and Computer-based Organizational Memory (Huber 1991). Huber's (1991) above definition of Organizational Learning Processes and Computer-based Organizational memory has been used by researchers as a foundation to probe value of customer co-created knowledge on product innovation process (Mahr et al 2014), impact of supply chain alignment on Organizational performance (Handfield et al 2015), Knowledge Transfer and Learning Process (Gil and Carillo 2016), Clustering-based proximity and knowledge sharing in franchise firms (Butt et al 2017) etc.

2.2 Levels and Dimensions of Organizational Learning

Learning at organizations happens through three levels using four processes: at individual level using the processes of Intuiting (experiences, images and metaphors) and Interpreting (cognitive map and conversation); at group level through the process of integrating (shared understanding and mutual adjustments); and at the organization level through the process of Institutionalizing (routines, diagnostic systems and rules and procedures) (Crossan et al. 1999). The four contextual factors that facilitate Organizational Learning are: Culture, Strategy, Structure and Environment. For Organizational Learning to occur, the Organizational Culture should be conducive to learning, the Corporate Strategy should allow for flexibility, the Organizational structure should foster innovativeness and welcome and accept new insights and a stable Organizational Environment for the learners (Fiol and Lyles, 1985).

Crossan et al's (1999) definition of levels of learning processes have been used by researchers to probe antecedents of innovativeness and its impact of business performance (Hult et al 2004), impact of top management leadership styles on Organizational Learning (Vera and Crossan 2004), impact of Organizational experience in creating Organizational Knowledge (Argote and Spektor 2011), how good learners in top management teams affect the success and frequency of acquisitions (Nadolska and Barkema 2014), the influence of organizational practices in the transfer of practices to international joint ventures (Tsang 2016) and impact of experiential learning in contract outcomes in case of Technology licensing (Khoury et al 2017).

Reviewing earlier research on Organizational Learning in Management Science domain, Pawlowsky (2001) identify 4 dimensions of Organizational learning while defining the conceptual framework for the management of organizational learning: 1) Learning Levels 2) Learning Modes 3) Learning Types and 4) Learning Process.

The four possible learning levels are Individual, Group, Organizational and Inter-Organizational. Management of Organization Learning should necessarily take care of these four learning levels, their interconnectedness and their ability to deal with complexity arising out of this interconnectedness. The three learning modes are Cognitive Learning, Cultural Learning and Action Learning. The learning modes stress that learning is not only cognitive but also happens through/at emotions and behaviour and the culture of trust between the team members and that with the management plays a major role. Management of Organization learning should also account for all the three learning types: Single loop, Double loop and Deutero. Finally, the learning processes: Identification, Creation, Diffusion, Integration/Modification and Action - are the most vital for Organizational Knowledge Management. (Pawlowsky 2001).

Pawlowsky's (2001) dimensions of Organizational Learning has been used to investigate barriers that impede learning in petroleum and gas companies (Ranjbarfard et al 2014), impact of trust on the relationship between organizational learning and the firm's marketing capabilities (Sanzo et al 2012), Hoffman's (2017) work on Organizational Learning through boundary spanning processes etc.

Unlearning is an important aspect of Organizational learning. Organizations should necessarily go through the phase of unlearning, i.e. the elimination of old and obsolete organizational knowledge, thereby making room for development of new adaptive capacities (Hedberg 1979).

2.3 Organizational Knowledge Management as a Dynamic Capability

Dynamic capabilities are key to gain competitive advantage. Firms should adopt a capability strategy i.e. choosing the right search strategy (broadening Versus deepening in the knowledge area in the right combination) for the right kind of capabilities (general purpose versus market specific knowledge in the right combination) to attain Dynamic capabilities to remain competitive (Pisano 2017).

Organizational Knowledge Management Capabilities is key to Organizational Effectiveness. Knowledge Infrastructure Capability is derived from of Technology, Structure and Culture. Knowledge Process Capability is defined as organization's ability to Acquire, Convert, Apply and Protect Organizational knowledge. Both Knowledge Infrastructure Capability and Knowledge Process Capability result in Organizational Effectiveness (Gold et al. 2001).

Organizational Knowledge Stocks and Flows are key to competitive advantage (Tallman et al 2004). Organizational Knowledge is the strategic asset of an Organization and plays a significant role in fostering the Organization's ability to compete and innovate (Bollinger and Smith 2001). Intellectual Capital in an Organization significantly impacts innovation capability of an organization (Obeidat et al 2017). Organizational Learning processes of creating, retaining and transferring of knowledge significantly impacts the technology management capabilities of a firm (Argote and Hora 2017).

Review of prior research reveals that Organizational Learning and Organizational Knowledge is a significant predictor of a firm's ability to innovate, ability to adapt to changing environment and retain competitive advantage.

3. Bloom's Taxonomy of Educational Objectives

The Taxonomy of Educational Objectives was developed by Bloom et al (1956) with the objective of having a framework for measuring the educational objectives, to facility a common language of communication about learning goals, and to define broad educational goals and the range of educational possibilities for a particular course or a curriculum (Krathwohl 2002). One of the key contributions in its revision by Anderson et al (2001) is the introduction of the two-dimensional Taxonomy table with The Knowledge Dimension in the horizontal axis and The Cognitive Process Dimension in the vertical axis.

The six cognitive process dimensions as per the revised Taxonomy are Remember (recall data or information), Understand (understand the meaning, translation, interpolation, and interpretation of instructions and problems), Apply (use a concept in a new situation or unprompted use of an abstraction), Analyze (separate material or concepts into component parts so that its organizational structure may be understood), Evaluate (make judgments about the value of ideas or materials) and Create (put parts together to form a whole, with emphasis on creating a new meaning or structure) (Anderson et al 2001). We posit that Bloom's taxonomy can be used as a means of assessing the state of AC in an organization as it helps to differentiate the levels of knowledge and the capabilities based on that level of knowledge in an organization.

4. Individual Learning Vs Organizational Learning

While treating Individual Knowledge and Organizational Knowledge as two distinct research

streams, prior research acknowledges the intrinsic linkages between the two which cannot be overseen. In this section we review how prior research have viewed the inter-linkages between the two, the importance of individual knowledge for organizational knowledge creation and the commonalities and differences between the two.

Hedberg (1979) states that "Although organizational learning occurs through individuals, it would be a mistake to conclude that organizational learning is nothing but the cumulative result of their members' learning. Organizations do not have brains, but they have cognitive systems and memories. As individuals develop their personalities, personal habits, and beliefs over time, organizations develop world views and ideologies. Members come and go, and leadership changes, but organizations' memories preserve certain behaviours, mental maps, norms, and values over time". As we can see from the above, over a period of time Organization develops Organizational memory which can function independent of the Individuals who contributed to that earlier. Extending this argument, Fiol and Lyles (1985) posit that the key difference between Individual Learning and Organizational learning is that Organizational learning systems are developed, maintained and "transmitted to other members by way of organization histories and norms".

March (1991) posit that Learning happens mutually between an organization and the individuals in it. Organizational knowledge is stored in their forms, rules, procedures, norms etc. Such knowledge gets accumulated over time by learning from their individual members. And at the same time individuals learn from such accumulated Organizational knowledge and Organizational beliefs. Individuals modify their beliefs on a continuing basis based on Organizational beliefs and at the same time Organizational beliefs also continue to adapt from beliefs of its individuals which correspond to reality. From this perspective, Individual and Organizational Knowledge and beliefs mutually depend on each other and are not mutually exclusive (March 1991).

Extending above research, Nonaka (1994) highlight two types of Knowledge: Explicit and Tacit. Explicit Knowledge or "Codified Knowledge" refers to knowledge that can be transferred in a formal manner, express in words and numbers etc. and "that is transmittable in formal, systematic language" (Nonaka 1994). Tacit Knowledge is personal, "hard to formalize and communicate" and as expressed by Michael Polanyi (1966), ""We can know more than we can tell".

Tacit Knowledge gets created by individuals internalizing their own experiences. Tacit Knowledge also gets created from other individuals by their shared experiences through "socialization". Explicit Knowledge gets created from Tacit Knowledge by individuals sharing their experiences with others i.e. "externalization". Explicit Knowledge also gets created by combining the Explicit Knowledge from others through the process of "Combination". This continuous process of Organizational Knowledge creation is termed as "Spiral of Knowledge" (Nonaka 1994).

Nonaka's (1994) pioneering research above has been cited and used by many other researchers and has led to seminal work on Organization Knowledge Management like Knowledge-based theory of the firm (Grant 1996), Internal stickiness as a barrier to transfer of best practices within the firm (Szulanski 1996), Organizational Learning Framework (Crossan et al. 1999), organizational capability perspective of Knowledge Management (Gold and Malhotra 2001) etc. Recent research citing Nonaka (1994) include knowledge internalization and product development (Chirico and Salvato 2016), impact of cross functional knowledge sharing on firm performance (Nguyen et al

2017), MNC knowledge transformation, boundary spanning and creative solution development (Tippman et al 2017) and Knowledge Management and Organizational Strategy (Dayan et al 2017) to name a few.

Tacit Knowledge and Explicit Knowledge are not mutually exclusive types of knowledge but are mutually dependent. Tacit knowledge forms the base for developing explicit knowledge. Only individuals with a certain level of shared knowledge can exchange knowledge to make it explicit: for an individual to understand the knowledge from another individual there must be a shared knowledge base between the two. (Alavy and Leidner 2001).

A firm's capability to manage both explicit and tacit knowledge, and the mechanisms that are employed to convert explicit knowledge to tacit knowledge and vice versa is the key to firm performance. The difference in such capability vastly explains the difference in performance between firms. In other words, a firm's ability to integrate individual's knowledge determines its competitive advantage in market place (Wang et al 2008).

The discussion above reveals that while Organizational Knowledge is not same as Individual Knowledge, Individual Knowledge plays a significant role in creating Organizational Knowledge and a firm's ability and processes in place to share and transfer the knowledge of the individuals within and across the organization fosters codifying the same in Organizational Memory.

5. IT Adoption

5.1 Prior Research on Information Technology Adoption

Information Technology adoption is one of the most mature, widely researched streams in Information systems research have made significant theoretical advances in the past 2 decades (Ventakesh et al 2007).

The research on importance of Technology for competitive advantage dates back to Resource Based View of the Firm (Wernerfelt 1984). In the seminal article on Resource Based View of the Firm, Wernerfelt (1984) highlight the importance of a firm's resource endowments and their heterogeneity for its profitability. A firm's resource can be any tangible or intangible asset/s tied to the firm at any given point of time that contributes to its competitive advantage. Technological leads are one such important resource of the firm that help an organization "develop and calibrate" advanced ideas that help the firm outperform its competition.

Research indicates that Information Technology positively impacts Organizational Performance by delivering IT Business value (Gurbaxani et al 2004). The business value delivered by Information Technology include enhanced productivity, improved profitability, reduced costs, reduced inventory and improved quality of operations (Devaraj and Kohli 2003). Information technology enables dynamic capabilities of the firm namely "rarity, appropriability, non-reproducibility and non-substitutability" and leads to Organizational Agility by improving its responsiveness, effectiveness and efficiency in adapting to environmental changes thereby positively impacting its competitive performance (Mikalef and Pateli 2017).

5.2 Models of Information Technology Adoption

Research on Information Technology Adoption has its roots based on the seminal work on

Diffusion of Innovations by Rogers (1962). Rogers (1962) suggest that individuals can be segregated into five categories based on their individual innovativeness: innovators, early adopters, early majority, late majority and laggards. The rate of adoption of innovations is impacted by factors like advantage, compatibility, trialability, observability and complexity. The first four factors positively influence the rate of adoption and the last factor, i.e. complexity, negatively influences the rate of adoption. The adaption of a technology to individual needs changes the nature of innovation adoption over time and also a new innovation can change the adoption rate of an existing innovation (Rogers and Shoemaker 1971, Rogers 1995).

Innovation decision process goes through five stages of decision making: 1) Knowledge: Where an individual becomes aware about an innovation's existence and gains an understanding of its function 2) Persuasion: Where an forms an opinion - either favorable or unfavorable - towards the innovation 3) Decision: Where an individual goes through the activities that leads him or her to either accept or reject the innovation adoption 4) Implementation: Where the individual exercises the decision to adopt / reject and 5) Confirmation: Where an individual seeks for confirmation about the prudency of the implementation decision and takes corrective measures to reverse the decision in case of receipt of conflicting messages (Rogers 2010).

Building on Rogers and Shoemaker's (1971) definition of complexity as "the degree to which an innovation is perceived as relatively difficult to understand and use" which acts as an barrier to innovation adoption and Bandura's (1977) Self-efficacy Theory wherein the author states that "In any given instance, behavior would be best predicted by both self-efficacy and outcome beliefs", Davis (1989) came up with what is popularly known as Technology Acceptance Model. The various other models that are used to study Technology Adoption are given in Table 1 below:

Table 1: Technology Adoption Models

Model	*Author/s*
Diffusion of Innovations	Rogers (1962). Rogers and Shoemaker (1971), Rogers (1995)
Theory of Reasoned Action	Fishbein and Ajzen (1975)
The Theory of Planned Behavior	Ajzen (1985, 1991)
The Social Cognitive Theory	Bandura (1986)
Technology Acceptance Model	Davis (1989)
Technology-Organization-Environment Framework	Tornatzky and Fleischer (1990)
Unified Theory of Acceptance and Use of Technology	Venkatesh et al (2003)

Technology Acceptance Model remains the most parsimonious, robust and widely generalizable model used by most of the IS researchers who have studied Information Technology Acceptance and Adoption. Defining Perceived Usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" and Perceived Ease of Use as "the degree to which a person believes that using a particular system would be free of effort",

Davis (1989) posit that Perceived Usefulness and Perceived Ease of Use influences people to accept or reject Information Technology.

Technology Acceptance Model has been used to study the role of user participation in Information Systems use (Hartwik and Barki 1994), Software evaluation and choice (Szajna 1994), E-commerce adoption (Gefen and Straub 2000), consumer behavior in online shopping (Gefen et al 2003), IS Innovations for environmental sustainability (Melville 2010), Social Media adoption in B2B organizations (Siamagka et al 2015) and understanding usage of Internet of Things (Dong et al 2017) to name a few.

5.3 Organizational Knowledge and Innovative Technology Adoption

Organizational Knowledge plays an important role in radical and complex innovation adoption in Organizations. Dewar and Dutton (1986) posit that the distribution of Knowledge in the Organization, the more different types of knowledge that are present in the organization, the more the depth of the Organizational knowledge resources, the more complex and specialized the organizational knowledge is, the higher will be the rate of radical innovation adoption. Damanpour (1987) posit that greater availability of specialized knowledge in individual specialists in an organization will result in broader technological knowledge base of the organization fostering exchange of ideas, techniques and procedures in the organization thereby positively impacting adoption of complex technological innovations. Extending this argument, recent studies have found technological maturity positively influencing manufacturing process innovation performance (Lee et al 2017), Organizational Intellectual Capital driving product and managerial innovations in Organizations (Elberdin et al 2017), Organizational Intellectual Capital components positively influencing Organizational Radical Innovation Performance (Agostini and Nosella 2017) etc.

5.4 Role of Knowledge in Technology Adoption Theoretical Framework

A careful review of the various models employed by researchers to probe Information Technology Adoption in Organizations reveal the paramount role that is played by Knowledge in such adoption decisions.

The five factors of relative advantage, compatibility, trialability, observability and complexity impacting the rate of innovation adoption in Diffusion of Innovation Theory (Rogers 1962, Rogers and Shoemaker 1971, Rogers 1995) are bound to be significantly impacted by the knowledge on the focal innovation. Especially, the complexity factor which is defined as "the degree to which an innovation is perceived as relatively difficult to understand and use" is a direct resultant of and limited to the knowledge on the innovation to be adopted.

The perceived ease of use and perceived usefulness predicting the intention to use Technology in the Technology Acceptance Model (Davis 1989) is a consequence and limited to the knowledge on the Technology in question.

The attitude towards the act or behavior predicting behavioral intention in Theory of Reasoned Action (Fishbein and Ajzen 1975) is defined as the individual's positive or negative feelings about performing a behavior and when looked from Information Technology adoption perspective, such positive or negative feeling about a Information Technology can only emerge from the individuals exposure and knowledge about the focal Technology.

The Theory of Planned Behavior (Ajzen 1985, 1991) is an extension of the Theory of Reasoned Action and the variable "attitude towards the act or behavior" is bound to have the knowledge of the individual as an origin.

The Social Cognitive Theory (Bandura 1986) posits human behavior as an interaction between personal factors, behavior and environment and the interaction between the person and the environment involves human beliefs and cognitive competencies that are developed and modified by social influences and structures within the environment. From an Information Technology context, the human beliefs and cognitive competencies about the focal technology tend to be rooted in the individual's knowledge about the same.

The Technology-Organization-Environment Framework (Tornatzky and Fleischer 1990) posits that the Availability and Characteristics of the Technology Influences Technological Innovation Decision making which again is seeded in the knowledge on the focal technology to ascertain its availability and characteristics.

Finally, the Unified Theory of Acceptance and Use of Technology (Venkatesh et al 2003) posits that performance expectancy, effort expectancy, social influence and facilitating conditions as determinants of behavioral intention to use. Performance expectancy and Effort expectancy can possibly be perceived only through prior exposure and relevant knowledge about the focal technology in question.

6. Conclusion

Our literature review reveals the continuing complexity highlighted by prior IS research in understanding how Organizations adopt Innovative Technology. We also reviewed the predominant role being played by Organizational Knowledge in IT Adoption decisions as highlighted by the Information Technology Adoption theoretical framework and models. However, the antecedents of such knowledge dimension have not been empirically validated in the popular IT Adoption models. Therefore, there is a need for future research to empirically probe these knowledge antecedents. It will also be prudent to include and empirically validate the relevance of cognitive process dimensions as per Bloom's Taxonomy of such knowledge and its influence on Organizational IT Adoption decisions. This will enable us to empirically assess the impact of Organizational Knowledge Management processes on innovative/creative IT artefacts adoption depending on the position/level of organizational knowledge and processes in the cognitive process hierarchy.

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Does Indian Management Education Needs Total Revamp? A Study with Reference to BBA & MBA Students in Bangalore

K. Srilatha and P. Srinivas Rao

Keywords: *Quality of Management Practices (QMP), Total Quality Education (TQE), Later Life Success of the Students (LLS)*

Abstract

In this survey, an effort is made to study the Quality of Management Practices and Later Life Success of the students of BBA &MBA graduates. The study revealed that present system of education focused more on academic examination, employment and economical empowerment but not on Human Empowerment. Therefore, there is urgent need for reorientation of the present Management educational system.

K. Srilatha, Research Scholar, Department of Management, Mysore University, Karnataka, India

Dr P. Srinivas Rao, Executive Dean, Department of Management, AL-Amen Institute of Management Studies, Bangalore, Karnataka, India

1. Theoretical Background:

Management Education serves several important functions in the economy, the most important being production of knowledgeable individuals who will contribute to the welfare of the organization. But educational institutions do not fulfill this requirement. For instance, the demands of skilled and specialized manpower from the industry are not being met as majority of graduates lack the necessary skill required by the industry. Further, According to NASSCOM, 2016, each year over 3 million graduates and post-graduates are added to the Indian workforce. However, of these only 25 percent of technical graduates and 10-15 percent of other graduates are considered employable by the rapidly growing IT and ITES segments and the gap between the demand and supply of skilled workers has been steadily increasing in India over the past couple of years1.

Again, in a recent FICCI-Cover survey-2016, it is estimated that India would require a workforce of 2.4 million employees in the IT and IT-enabled services sectors by 2020. However, over the past fifteen years, India has produced 1.6 million professionals and faces the uphill task of producing another 0.8 million in the next two years. The U R Rao Committee has projected that India needs around 10,000 PhDs for meeting its huge research and development needs, but India produces barely 400 PhDs in a year2.

Though higher education sector in India is considered to be the

third largest in the world in student numbers, after China and the United States, no single Indian University occupies a place in the world's top 300 but China has six Universities. The main reasons for such state of affairs are - lack of infrastructure combined with poor student quality and relatively low salaries for teachers in India. If this trend continues, it will become increasingly hard to find educators in India, who can compete with the best from America, Europe, Japan and China. The best academics in India might wind up leaving for better prospects in countries such as Australia and Singapore, which are welcoming Indian immigrants. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), India has the lowest public expenditure on higher education per student in the world. Therefore, the government needs to seriously rethink its approach in order to promote the quality of higher education, particularly management education in India3.

Again, there is a wide spread grievance these days that colleges produce a large number of graduates every year, but they suffer in their later life. This fact is supported by many survey reports. For instance, The National Crime Records Bureau (2009) noted that more than one lakh lives are lost every year to suicide in our country. In Kerala, the country's first fully literate state has the highest number of suicides. Around 32 people commit suicide in Kerala every day. Why this is happening?, from the survey reports the author could find that Self concept i.e., self confidence, self motivation, self control, self knowledge, self respect and self responsibility, setting priorities and Balanced mind of the students found to be low. Another fact noted from the survey report is that most of the students have yet to master language skills (listening, speaking, reading and writing). Experts say that the students, who have emotional problems, cannot master their language skills well. Such students will always try to hurt others. They cannot concentrate on studies and set priorities in their life. Tests and exams, higher expectations, illness, Poverty, unemployment, debts, mental disorders, loss of job security, etc are creating a spate of suicides in India's young population. (National Crime Records Bureau,2014)4.

If the system of education, which focused more on academic examination, employment and economical empowerment but not on human empowerment, is to survive tomorrow, reorientation of the present management educational system is required. Hence, it has become imperative for Indian educational sector to plan and prepare a competent, talented and innovative workforce through Total Quality Education (TQE). Then, what is Total Quality Education?

In the present context, Total Quality Education means6:

Total = Involvement of all stakeholders in the institutional Improvement Drive

Quality = Creating an environment of continuous improvement that gives Total Satisfaction to both internal and external stakeholders

Education = Imparting true education that helps students to excel both in Academic and life examination

Experts contend that though the number of institutions imparting total quality education in a meaningful way is comparatively small, the gains generated in these institutions appear to be significant. For instance, Through TQE Students get knowledge beyond the syllabus. This builds up self-confidence among students and secure higher scores in the academic examination. It also enables them to set goals and develop a long-term vision and make a realistic self-assessment

and ultimately the overall education scenario improves. Again, true education helps students to develop positive qualities like love, compassion, mercy, sympathy, empathy, punctuality, discipline, obedience and good character. Besides this, such education makes students feel better about themselves. On the other hand, it enables industry in recruiting the right people from the academia. As the 21st century has created a new and challenging environment for higher education, experts are now recommending Total Quality Education as the need of the hour for all educational sectors in India through the practice of quality management7.

2. Problem Statement:

Quality education is not a new concept to Indian educational institutions; but they still have many quality related problems to overcome. In order to have a deeper understanding of the problems faced by the educational institutions offering management education and subsequently develop solutions, a systematic and comprehensive study has been made by the researchers in 2018. The main objective of the survey is to study the status of the Quality of Education practices in colleges and find the answers to the following research questions?

1. What is the assessment level of respondents on QMP?
2. What is the assessment level of respondents on LLS?

3. Research Methodology:

The study is conducted through a survey method. For the purpose of the study, primary data is collected through structured questionnaire and secondary data is collected from Journals and websites, to achieve the formulated objectives.

4. Sampling Design:

The population of this study consisted of BBA &MBA students, who have a minimum of two years of work experience in the industry, active member of alumni association of the college and based in Bangalore. A sample of 200 respondents was identified randomly. A total of 100 responses were obtained out of the 200 questionnaires distributed, resulting in the overall response rate of 50%.

5. Administering the Scale:

The final scale consisted of 87 statements. These statements were then administered to the respondents (Graduates), who are selected on random basis.

9. Plan of Analysis:

In this study, Percentages are calculated to analyze and interpret the data.

10. Research Findings:

The main results of the study are:

Objective - 1: To study the Assessment level of respondents on QMP

Assessment Level	*Category*	*Respondents*	
		Number	
Low	= 50 % Score	180	36
Moderate	51-75 % Score	320	64
High	> 75 % Score	0	00
Total		500	100

Source: Primary Data

Sixty four percent of the respondents have moderate level of satisfaction and thirty six have low level of satisfaction with regard to quality of education offered to them in colleges. However, it is very disheartening to note that none of the respondents have high level of satisfaction with regard to quality of education offered to them in colleges, due to the following reasons:

Leadership Style

1. Leadership and Working in Teams is still a weak area despite this being an integral part of the syllabus in most of the institutes.
2. Students are stuffed with factual information rather than telling them how to analyze and learn the subject.
3. Change agents are accessible to the students occasionally in order to guide and put them on the right track.
4. Planning the long term success, developing a measurement culture, establishing a continuous improvement culture, monitoring performance improvement, working to the best standards and benchmarking found to be below average.

Policies & Strategies

1. Much importance is not given for involving industry experts in curriculum sculpting (Design/ Redesign).
2. The college development planning board is not established for formulating long term perspective plans.
3. Policies and strategies are not reviewed at regular intervals.
4. Vision and mission statements are displayed but its significance is not conveyed to the students.
5. Rules and regulations of the college is not communicated to all stakeholders including students
6. Institutional mission and objectives are not focused.

People Management

1. Research advisory committee, career guidance and placement cell is not strengthened.
2. The feedback received from various committees set up by the institution is sometimes pigeonholed and is not acted upon for improving the institutions' performance.
3. Research profile of the faculty in terms of research projects and publications in professional journals are largely lacking.
4. Absence of formal alumni and parent-teacher association
5. Teachers under self-funded programs are not paid as per UGC scale of pay.
6. Faculties are not empowered to give quality of teaching and service to the students.

Resource Management

1. Well-stocked library, with effective linkages with other leading Libraries are not maintained.
2. Resources (internal and external), available to the institution is not effectively allocated and utilized.
3. The Institutes do not make use of appropriate ICTs for effective teaching.
4. Administration and library related work is partially computerized.
5. Absence of communication skill center to develop English and foreign language competencies
6. Laboratories are not well equipped with latest equipments / instruments.
7. The Colleges do not update their Website regularly.

Process Management

1. Most of the students feel that the semester duration is not properly aligned to the curriculum.
2. Curriculum is not revised from time to time in order to incorporate latest concepts and developments and make the curriculum more holistic and appropriate.
3. Summer internship is not made mandatory for the students.
4. More MOUs (Memorandum of understanding) with industries, NGOs is not arranged.
5. Lack of programs for the development of entrepreneurship skills among the students

Institutional Social Responsibility

The colleges do not have a strong community network and is not actively engaged in various out-reached activities.

People Satisfaction

1. The recruitment of faculty is not planned and executed in a systematic way in order to maintain professional Standards.

2. Effective salary structure/reward/award management is not implemented.
3. Job security is not ensured to the faculty and supporting staff.
4. Student strength going over 120 in a class, the faculty may find it difficult to give individual attention
5. No formal mechanism for addressing the grievances of staff members.
6. The level of employee absenteeism is high.

Customer Satisfaction

1. Only few students are motivated and guided to participate in the intercollegiate cultural or literary competitions or present papers in the conferences or seminars.
2. Most of the students expressed that the curriculum of B schools relies heavily on case studies based on corporate situations abroad. These case studies may not be useful, if they are employed in the Indian companies, as work culture in India is radically different from that of the West.
3. Most of the students' surveyed feel that the courses covers more theoretical grounding and provide more theory based inputs and are not practically oriented enough. Therefore, the present curriculum is not relevant in terms of industry orientation and expectation.
4. Majority of the students are not aware of the facilities provided in their own institution. This could be due to the low degree of involvement of the students in the course, which affects their performance to a great extent.

Objective - 2: To study the Assessment Level of Respondents on LLS

Assessment Level	*Category*	*Respondents*	
		Number	
Low	= 50 % Score	090	18
Moderate	51-75 % Score	410	82
High	> 75 % Score	00	00
Total		500	100

Source: Primary Data * Significant at 5% level X2 = 4.50*

The Later life success of 82 percent of the respondents found to be at moderate level and 18 percent at lower level. However, Commerce and management graduates do not have high level of satisfaction even with regard to their later life success, due to the following reasons:

1. Students do not set goals. Some of the reasons for not setting goals by the students are lack of confidence, not having a workable plan for achieving them and fear of failure.
2. Students are not aware of the significance of self concept because they were not mentally

prepared to know about themselves, love themselves, and be true to themselves.

3. Most of the students have yet to master language skills (listening, speaking, reading and writing) well, although they have already completed their graduation.
4. Students are better in their outlook and ambition, but lack commitment and are poor team players.
5. Majority of the students lived in the past, without realizing the fact that past is past, and they should live in the present moment with an eye towards future.
6. They feel to commit suicide because of the following: love failure, extra-marital affairs, loss of job security, boss abusement etc.
7. Students have not realized that they should learn to set healthy personal boundaries, which are necessary for maintaining a positive self-image and not allowing others to define them.
8. Most of the students' have not developed the art of listening patiently either to their inner voice or to other people around them.
9. A good number of students' suffer from bad inter personal relationship in their workplace and in their family which has led to disagreement and conflicts.
10. Growing competition and the desire to succeed in every field has lead to a higher level of anxiety, stress and acute depression among students. Because of this, they are not able to concentrate on their career progress and set priorities in their life.
11. Students have subject knowledge but they are not able to face any kind of crisis in their life confidently.
12. The performance of the students in various competitive examinations found to be low.

Conclusion:

The study has identified several areas for improvement of which the most critical have been "People management", "Process Management", "People satisfaction" "Customer satisfaction" and Institutional Social Responsibility. These areas need priority as a part of the current quality assurance program in order to establish a self-reliant learning institution.

Scheme of Recommendations:

Leadership Style

1. Teacher should make students responsible for their own growth and take away things, which students have and do not require. Further, Teacher should punish students with compassion and lead them by example
2. Teacher availability outside the class and extra-academic interaction through extra-curricular activities and counseling is important.
3. B schools should prepare the students mentally and technically to become not only good intrapreneurs but also enterprising entrepreneurs.

Policies & Strategies

1. The academia should foster long-term relationships with the industry to enable industry academia interface.
2. Industry visits as per students' specialization can be arranged, so that students will have exposure of current happening in the Industry.
3. All the stakeholders of the institution should have one strategy i.e. uncompromising values at work.
4. Academic collaborations with national / international institutes may be enhanced.
5. Alumni, Corporate world, parents, current students can be involved in the strategic planning.
6. Institution has to develop a perspective plan for the next 10 or 20 years in tune with the emerging socio-economic scenario
7. To strengthen students to handle any business crisis successfully, B-schools should have the policy of admitting those students, who have a minimum of two years of work experience to do an MBA program.

People Management

1. Good Faculty who is excellent in delivery and subject knowledge shall be appointed.
2. Effective performance measurement systems for faculty, staff and students should be adopted; as such system induces a spirit of healthy competition in the institution.
3. Administrative staff should be supportive and customer oriented.
4. More teachers are to be encouraged to participate in National and International seminars and management may recognize those who publish papers in International journals.
5. Attract and retain qualified teaching and non teaching staff

Resource Management

1. Language lab can be established to improve communication skills of students and the Institute can make use of appropriate ICTs (Information and Communication Technology) for effective teaching. Further, The Colleges should update their Website regularly.
2. Canteen and Hostel facilities should be good.
3. Library should be open 24 x 7, availability of books and e-library and Placement should be excellent.
4. Library infrastructure needs to be improved.
5. Exploit the possibilities of generating resources through consultancy and collaborative arrangements.

Process Management

1. It was felt that each subject should be taught by 2 - 3 faculties (one from the industry, and one from the visiting panel with core competence in the subject).
2. Coaching classes may be arranged for students to take various competitive examinations.
3. Prominent captains of industry can be invited by the academia for conducting workshops, training sessions etc.
4. The question papers set should be short and thought provoking and questions designed are not identical to questions set in previous examination papers.
5. Multiple-choice tests can be conducted after completion of each chapter; as such method reduces anxiety and positively affects a student's ability to learn.
6. The two-draft technique or the two-draft term paper requires the student to redo the exercise. Such exercise motivates the students to review, to revise and to edit their work.
7. Teaching Pedagogy should be of interactive session and case based learning
8. It is a known fact that a list of facts will be forgotten, but stories are remembered. Therefore, few subject related concepts can be explained with the help of stories. Even students enjoy story telling classes.

Institutional Social Responsibility

1. Every institution should now think and act as a responsible trustee of Earth, seeking choices in ecology, economics and ethics that will provide a sustainable future to eliminate pollution, poverty and violence and foster peaceful progress in the human adventure.
2. Disruptions in world economies, regional political turmoil, and natural and other disasters have affected many people and organizations, including ourselves. The last few years have presented unprecedented challenges around the world. Therefore, institutions have to begin recognizing and remain committed to the principles of environmental stewardship and social responsibility.

People Satisfaction

1. The grievance redressal cell has to be activated better with representation from all the constituencies of the college.
2. Extend the health and welfare measures to faculty & Administrative staff.
3. The self financing stream teachers may be given good salary.

Customer Satisfaction

1. In order to enhance the emotional intelligence of the students, the colleges can provide TM (Transcendental Meditation) or NLP (Neuro Linguistic Programming) or Vipasana Meditation facility to the students.
2. Pet therapy can be used extensively to reduce stress in students.

3. To help students to understand themselves better, in-depth self-analysis exercises and role-playing can be organized.
4. To develop rational thinking and emotional awareness in the students, Small group discussion can be conducted at regular intervals in the college.
5. To build interpersonal and social skills in the students, the college can provide opportunities to the students to do social projects like survey on model house, project on learning habits of the children in slum and rural areas, Socio-economic status of the women in rural areas, Quality of mid-day meals provided to the students in rural areas etc.
6. A Listening Behaviors Survey can be conducted and based on the findings a skill-building activity can be designed to supplement classroom lesson plans. Effective Parroting, Self-reflection and Small group discussions can be used to develop better Listening skills.
7. Students' should be given the opportunity of 'Freedom to experiment' i.e. freedom to explore, venture, experiment and succeed. This builds self-confidence and creativity.
8. The beginning can be made by introducing "Earn While You Learn Scheme" to the poor students to enable them to opt for many of the self financed inter-disciplinary courses.
9. Life skill education and counseling would be introduced in colleges.

Let us hope that all these efforts would lead to one magnificent phenomenon that all of us are longing to see - which also is the very purpose of Education - a confident and successful smile on the face of the student.

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Dyadic Adjustment, General Mental Health and Happiness Among Married Couple

Aneetha P. K., Nagalakshmi and Ramaa Raju

Keywords: *Dyadic Adjustment, General Mental Health, Happiness, Married Couples.*

Abstract

The present study aimed to investigate the factors contributing to marital adjustment and whether there is any gender difference on marital adjustment. Purposive sampling procedure was adopted. The sample consisted of 50 married couples (50 men and 50 women) from the urban population, who were married for 3 years and above. The sample was administered 'Dyadic adjustment scale' by Graham Spanier, 'General health questionnaire' by Goldberg and Hillier and 'Oxford happiness questionnaire' by Michael Argyle and Peter Hills. The data thus collected was subjected to statistical analysis using "t' and Pearson's Product moment correlation. Results show that there is a significant negative relationship between general mental health and marital adjustment and a significant positive relationship between happiness and marital adjustment. However, there were no gender differences on marital adjustment. Factors contributing to marital adjustment are discussed.

Aneetha P, Department of Psychology, MES Degree college of Arts, Commerce and Science, Bangalore, Karnataka, India.

Dr K. Nagalakshmi, Associate Professor Psychology, DDE Wing Annamalai University, Tamil Nadu, India

Dr Ramaa Raju, Associate Professor Psychology, dept of psychology, Jyoti Nivas College, Bangalore, Karnataka, India

"*Marriage is not a noun, it's a verb. It isn't something you get, it is something you do. It's the way you love your partner everyday*"..... **Barbara De Angelis**

According to social scientists in India, marriage is a consecrated union. Marriages in India are known for their vibrant, rich and superior look. Wedding ceremonies are considered as ritual knot. India is largely a patriarchal society. After marriage the women comes to stay in husband's house, hence she has to leave her parents home. She has to make adjustments and live her life in the husband's house as her home. After industrialization, the concept of marriage is evolving, there is no more joint families but nuclear families has become the trend. Relationships in marriage are also changing. A recent study by Isaac and shah reported a positive link between androgyny and marital adjustment, and a trend for couples to move towards gender neutral dyads.

The success or failure of marriage depends on several factors like commitment, happiness, adjustment, perseverance, respect for each other, trust, realistic expectations, honest communication, endurance in relationship etc.

Need for the Study

The study aimed to investigate thefactorscontributing to marital adjustment among married couples. A happy marriage to a great extent determines the quality of life. Even with radical changes in societal definition of marriage and family, family life is still

widely considered to be salient to life satisfaction and well being (Basharpoor&Sheykholeslami, 2015).Studies have shown that depressive symptoms among women is associated with marital discord(Brown &Harris, 1978) ; also depressed individuals in unhappy marriages recover less quickly from a depressive episode(McLean, Ogston& Grauer,1973). Marital satisfaction is positively associated with measures of global health like cardiovascular functioning(Ewart,Taylor,Kraemer& Agras,1991) and better immunity (Kiecolt-Glasner et.al., 1988). Trudel and Goldfarb (2010) have found that satisfying marital functioning acts as a protective factor against psychological distress. Overall it appears that marital satisfaction increases the quality oflife.

Against this backdrop, the current study intended to study some factors that lead to marital adjustment.

Objectives of the Study

The study also aimed to analyse if there is any relationship between general mental health and happiness on marital adjustment. Based on the objectivefollowing hypotheses were framed.

Hypotheses

1. There is a significant negative relationship between general mental health and marital adjustment.
2. There is a significant relationship between happiness and marital adjustment.
3. There is no significant gender difference on marital adjustment.

Research Design

The present study examined the relationship between dyadic adjustment, general health and happiness among married couples. Hence, it used a correlational analysis design.

Variables

Independent variable: General mental health and happiness

Dependent variable: Dyadic/ marital adjustment

Review of Literature

Spainer (1976) aimed to evaluate and assess couple satisfaction in an Italian context .A sample of 896 participants on how they each partner within the couple perceive his or her relationship (M= 444.54; SD=10). Exploratory and confirmatory factoranalysis was performed in order to test the dimensionality of the tool and these demonstrated the reliability of the four factors. The model, representing four dimensions of dyadic adjustment was confirmed.

Shaifali (2009) examined happiness of 91 Hindu married couples with an average of 11 years, from three socio economic classes, three family structures and arranged and love marriages. Results reveal that happy couples, compared with unhappy couples, reported agreement, empathy, validation, support and fulfilled expectations. Couples' experience and expression of intimacy, affected by social context, also predicted enhanced levels of happiness in marriage while conflict had a negative effect on marital happiness. This research suggests how personal desires may be transforming cultural practices.

Choi (2008) investigated (a) whether marital conflict might directly lead to changes in depression and functional impairment, (b) whether marital conflict might indirectly lead to changes in functional impairment via depression, and (c) whether marital conflict might indirectly lead to changes in depression via functional impairment. on data collected from a sample of 1,832 at the National Survey of Families and Households. Results indicated that marital conflict directly led to increases in depression and functional impairment and indirectly led to a rise in depression via functional impairment. Overall, findings suggest marital conflict is a significant risk factor for psychological and physical health among midlife and older adults.

The review of literature revealed that very few studies have been done in the Indian context recently. Indian society has undergone several changes in the recent years. Family life in India has also undergone changes due to more women entering the workforce and changes in family structure to name a few. Therefore, this study is an attempt to light on some factors that are important for marital adjustment.

Method

Participants

Respondents included50 married couples (50 men and 50 women). Purposive samplingtechnique was used. A criteria of minimum of 3 years of marriage was applied to select the participants.

Tools

Demographic schedule. Ademographicschedule specific to the purposes of the study was collected. Information regarding Age, Gender, number of years of marriage and occupation.

Dyadic Adjustment scale. The DyadicAdjustmentscale was developed by Spanier G.B has 32 items to measure a relationship quality. The scale is divided into 4 subscales -(1) Dyadic Consensus measures the degree to which respondent agrees with partner (2) Dyadic Satisfaction -- degree to which respondent feels satisfied with partner (3) Dyadic Cohesion assesses the degree to which respondent and partner participate in activities together (4) Affectional Expression evaluates degree to which respondent agrees with partner regarding emotional affection. Scoring is based on 5 point Likert scale. Scores earned by the subject on every marked items are added together to yield the total score. The Cronbach's ? coefficient ranges from 0.80 to 0.90.

General Health Questionnaire (GHQ): The General Health Questionnaire is a screening device for identifying minor psychiatric disorders in the general population and within community or non-psychiatric clinical settings such as primary care or general medical out-patients. The scale has 28 items which assess four subscales - somatic symptoms, anxiety and insomnia, social dysfunction, severe depression.Every statement has four responses; the subject chooses a response with regard to his/her health from the recent few weeks. Responses are scored, zero for the first two options, one for the last to responses of the respondent.test retest reliability has been reported to be high (0.78 to 0.90) (cronbach's alpha 0.9- 0.95).

Oxford Happiness Inventory: (OHQ). Oxford happiness inventory is a 29 item questionnaire developed by psychologists Michael Argyle and Peter Hills at Oxford University. This gives a snapshot of current level of happiness. Items that are marked (R) should be scored in reverse. For example, if the subject gave a score of "1", it should be crossed out and scored as "6", similarly "2"

to "5", "3" to "4", "4" to "3", "5" to "2" and "6" to "1". There are 12 items that are reverse scored (Item number 1, 5,6,10,13,14,19, 23, 24, 27,28,29) .OHQ demonstrated high scale reliabilities with values alpha (167) =0.92 and a(168)=0.91 respectively.

Procedure

In order to collect the data for research married couples were contacted personally to get their consent to participate in the study. With their consent, the purpose of the study was briefed and rapport was established. Ethical issues like confidentiality of the information and convenience of the subjects were strictly followed for the collection of the data. Participants were informed of the choice to withdraw themselves from research at any point during the responding period. Subsequently Dyadic /marital adjustment scale, General health questionnaire, Oxford happiness questionnaire were administered as per the standard directions. After the participants finished responding they were thanked for their participation and cooperation.

Results and Discussion

The obtained data was organized and analysed using Pearson Product Moment Correlation and't' test.

Table 1Pearson's Product Moment Correlation Between General Mental and General Mental Health Among Married Couples

Marital Adjustment	*Correlation co-efficient value*
General Mental Health	-.305**

**p<0.01

On examination of table 1, we find that there is a significant negative relationship between adjustment and general mental health. This indicates that the marital adjustment is closely related to the mental health status of the spouse. Lesser general mental health issues is associated with better the adjustment among the partners. Hence, the results prove the hypothesis which states that "there is a significant negative relationship between general mental health and marital adjustment". Thisfinding was support by a study conducted by Julianne Holt and Wendy Birmingham(2008) who also found that Marital Quality was aassociated with less stress, less depression and higher satisfaction with life.

Table 2Pearson's Product Moment Correlation Between Marital Adjustment and Trust Among Married couples

Marital Adjustment	*Correlation co-efficient value*
Happiness	0. 286

**p<0.01

Table 2 shows the correlation between marital adjustment and happiness . There is a significant positive relationship between the two variables which indicates that greater the happiness, higher is the marital adjustment. The hypothesis which states "There is a significant relationship between

happiness and marital adjustment" is accepted. Blais, Sabourin, Boucher &Vallerand(1990) researchsupports the findings of couple happiness emphasizing the importance of autonomy driven process in the development and maintenanceof couple's relationship.

Table 3 Gender differences on Marital Adjustment

	Males		*Females*		*'t' value*
Marital	*Mean*	*SD*	*Mean*	*SD*	
Adjustment	48.40	9.61	47.66	9.82	0.70 NS

P <0.05, NS: Not significant

Table 3 shows the gender differences on marital adjustment. The table shows that males, there is no significant difference between the two genders on marital adjustment. The obtained' values of 0.70 is statistically not significant indicating males and females do not differ significantly on marital adjustment. Hence the hypothesis that "there is no gender difference on marital adjustment" is supported. The results are supported by a meta-analysis by Jackson, Miller Oka & Henry (2014) who found no significant gender difference on marital adjustment.

Findings

1. There is a significant negative correlation between marital adjustment and general mental health of married couples.
2. There is significant positive correlation between marital adjustment and general mental health of married couples.
3. There is no significant gender difference on marital adjustment.

Limitations of the Study

1. The study was restricted to only urban population.
2. The sample size was small; hence the study cannot be generalized to the general population.
3. Factors of socio economic status were not considered.
4. Years of marriage was not categorized for better understanding.

Scope for Thefuture Study

1. Different socio economic status and socio cultural background couples can be included in the study.
2. Future studies can include other factors which impact marriage like life satisfaction, expectations, communication.
3. Qualitative data through couple interviews can reveal rich data regarding marital quality.

Implications of the Study

The study provides insight into factors affecting marital adjustment.The study found that good general mental health conditions and happiness is related to better marital quality. Perceived happiness seems to act as a buffer against marital discord. The results of the study can be utilized to design better premarital conseling sessions. Married couples can be encouraged to enhance their levels of happiness by sharing household chores and responsibilities, practice healthier lifestyles and in general to adopt better coping mechanisms to deal with life stressors.

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A Study on the Economic Impact of Wind Energy Sector in Kanyakumari District, Tamil Nadu

M. RamaShri

Keywords: *Economic Impact, Wind Energy Sector, Economic Development, Energy Security, Sustainable Development, Kanyakumari District*

Abstract

Energy security and sustainable development are on the global agenda due to the impact of volatile energy prices. High demand for energy security, concern over environmental sustainability and global climatic change. In the present scenario, energy is the most important ingridientfor all the economies in order to cater the growing needs of the rural and remote areas.

The study examines the status of wind energy potential at the global and in the state of tamilnadu.wind mill sector of Tamil Madison is the most prominent place as far as wind electricity is concerned since 40Percent of the total wind power generated in the country.

The methodology of the study involves the collection of primary and secondary sources of data based on the multi stage random sampling technique which is used for comparing the socio economic conditions of the people in respect of wind farm and non wind farm areas in the study area of thuvazhi taluak.

The paper further concludes with the facts of evidence that the Socioeconomic conditions prevailing in wind farm areas are much strengthend than the non wind farm areas striving towards the economic development of our Indian economy.

Dr M.RamaShri, Assistant Professor - Dept. of Economics,A.M Jain College, Chennai, Tamilnadu, India

Introduction

Energy security and sustainable development are high on the global agenda due to the impact of volatile energy prices, high demand for energy security, concerns over environmental sustainability and the global climate change. In the present scenario, energy is the most important factor for all developed and developing countries. Currently, commercial energy consumption makes up about 65 per cent of the total energy consumed in India. This includes coal with the largest share of 55 per cent, followed by oil at 31 per cent, natural gas at 11 per cent and hydro energy at 3 per cent. Non-commercial energy sources consisting of firewood, cow dung and agriculture wastes account for over 30 per cent of the total energy consumption. The critical feature of India's energy sector and linkages to economy is the import dependence on crude and petroleum products. Import bill is likely to grow to more than 100 per cent in the near future because of population explosion and improved living standard in the country. Being a tropical country, India has unlimited potential for producing renewable energy sources. These sources of energy can play an important role in the sustainable development by providing basic energy needs of rural and remote areas.

Review of Literature

"Tamil Nadu has made impressive strides in power generation during the last few plan periods. There has been a striking increase in the transmission and distribution network, which has enabled the extension of power to all villages and hamlets.

Confining to level terrain, Gurajath and Tamil Nadu are considered to have the best wind potential in the country. According to an estimate, the capacity of wind generated electricity that can be accepted into the grids of these two states is about 10000MW. This will require about 2000sq.km. or 2 lakh hectares of land, based on the wind turbine (Phadke et al, 2011)"

Lantz and Tegen (2008) conducted an analysis pertaining to variables affecting economic development of wind energy. The authors assert that creating policies to ensure maintenance materials are supplied by in-state business and that the local labour force is trained to perform wind turbine maintenance is also likely to have large impact for wind power plants operating for 20 or more years.

Burton et al (2006) conducted a comparative analysis on the economic impact of wind farms in rural communities across the country and concluded that more direct benefits are found in rural communities, especially those with few industries and those primarily with farming. He explains that the supplementary income paid to farmers and the local taxes greatly contribute to the economic development impacts of these communities.

Renewable Energy

The impetus behind wind power expansion has come increasingly from the urgent need to combat global climate change. Most countries now accept that greenhouse gas (GHG) emissions must be drastically slashed in order to avoid environmental catastrophe. Wind energy not only offers both a power source that completely avoids the emission of carbon dioxide, the main GHG, but also produces none of the other pollutants associated with either fossil fuel or nuclear generation. The Indian renewable energy sector has shown impressive growth in the past few years and investments into the sector have increased significantly

Wind Energy

Wind energy means the energy in wind is nothing but air in motion kinetic energy in the earth's almost spheres are harnessed as wind energy or wind power, as it is generally known. Wind energy is the kinetic energy that is present in moving air. The amount of potential energy depends mainly on wind speed, but is also affected slightly by the density of the air, which is determined by the air temperature, barometric pressure, and altitude. For any wind turbine, the power and energy output increases dramatically as the wind speed increases. Therefore, the most cost-effective wind turbines are located in the windiest areas. Wind speed is affected by the local terrain and increases with height above the ground, so wind turbines are usually mounted on tall towers.

History and Development of Wind Energy

There are early records of the use of wind mills, such as those from Persia in the 10th century these windmills were guide unlike familiar "Dutch" wind mills, as the sails revolved in a horizontal plane like the of a helicopter. The familiar with sails rotating in a vertical plane first appeared in Western Europe (France and England) in the 12th century. Until 1745, mills had to be turned by hand to face the wind. In 1775 "Andrew Meikle" replaced the sail - cloth by hinged shutters controlled by springs which would be blown open by a high wind, which would be blown open by a high wind allowing some of the wind to pass through the sills without doing any work. In 1807,

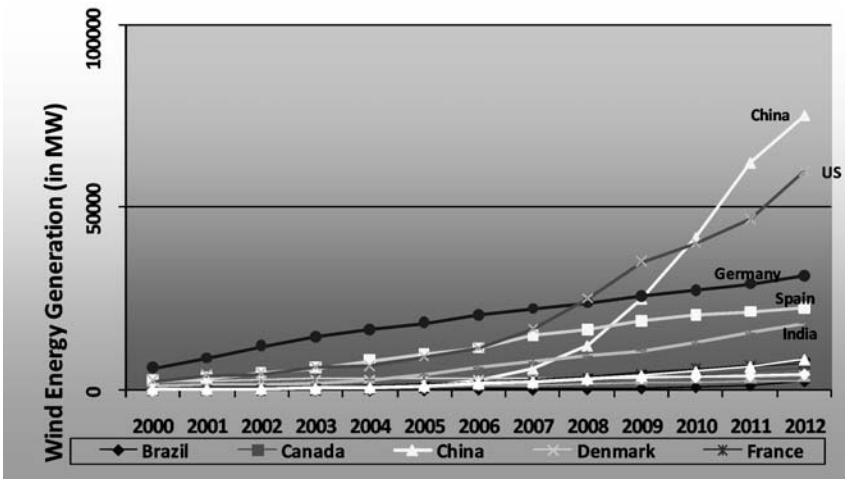
"Sir William Cubit" replaced the springs by a hand - control that could by operated while the mill was running. In 1985 first wind electric system was built "Denmark" this system designed by "Prof. Law Cour". Consisted of an 80 ft, tower supporting a 75 ft diameter, four bladed rotor driving mechanized gear and shaft drive train powered a generator on the ground. In the second world war a more modern of wind mill with two (or) three blade propellers rather like those of helicopters but turning vertically, was introduced in "Denmark" the new machines with blades 40 feet long gene rated as much as 70 KW. But after over 4 years of generating up to its full capacity one of its two blades broke and it was abandoned.

Global Status of Wind Energy

Wind is commercially and operationally the most viable renewable energy resource and, accordingly, emerging as one of the largest source in this sector. At the end of December 2008, worldwide capacity of wind-powered generators was 250 GW out of which more than 22 GW was added in 2011 (World Wind Energy Association, 2012).

In 2008, the United States and China took the lead, United States taking over the global number one position from Germany and China getting ahead of India for the first time, taking the lead in Asia. The United States was the fastest growing wind power market in the world for the third year in a row. The massive growth in the United States wind market increased the country's total wind power generating capacity by half. Wind development in the United States is supported by a mix of state and federal policies. At the federal level, wind power receives generous tax incentives in the form of a 10 year production tax credit which, in effect, acts like a feed-in premium and 5 year accelerated depreciation (Global Wind Energy Corporation, 2012).

The Leading Wind Energy Generation Countries in the Global Level



Wind Energy Potential in India

Wind in India is influenced by the strong southwest summer monsoon, which starts in May-June, when cool, humid air moves towards the land and the weaker northeast winter monsoon, which starts in October, when cool, dry air moves towards the ocean. During the period from March to

August, the wind is uniformly strong over the whole Indian Peninsula, except the eastern peninsular coast. Wind speeds during the period from November to March are relatively weak, though higher winds are available during a part of the period on the Tamil Nadu coastline. In order to tap the potential of wind energy sources, there is a need to assess the availability of the resources spatially. A wind resource assessment programme was taken up in India in 1985. Around 1150 wind monitoring/mapping stations were set up in 25 states and Union Territories for this purpose. Over 200 stations in 13 states and Union Territories with annual mean wind power density greater than W/m 2002 at a height of 50 m above the ground level show wind speeds suitable for wind power generation (Ghosh et al, 2012).

It is observed that the states of Karnataka and Rajasthan have a growth pattern in the same pace and appears to have reached the inflection point in 2012 and the growth rate declined and reached towards the saturation level. The results indicate that the diffusion of wind energy technology may reach 99 per cent of the maximum utilization potential of 11531 and 4858 MW by 2020. Wind energy in Tamil Nadu has already gained importance showing a good progress in the development. The inflection point for Tamil Nadu and Maharashtra is observed in 2007 and 2009, respectively, and may reach 99 per cent of their maximum utilization potential by 2020. It may be noted that the states of Gujarat and Andhra Pradesh have a growth pattern in the same pace and appears to reach the inflection point in 2018 and 2019, respectively. After 2003, Gujarat is slowly picking up and considerable growth rate has been observed in the wind sector. Gujarat may achieve more than 94 per cent of its potential by 2030. Andhra Pradesh shows a gradual and steady increase in harnessing its technical wind potential and it can achieve more than 98 per cent of its potential by 2030 (Kumar, 2012).

Wind Energy Potential in Tamil Nadu

The state of Tamil Nadu is blessed with some of the windiest sites in the country, which has been the main cause of the rapid development. Tamil Nadu is ahead of all other states in terms of installed capacity. The state has experienced a very good and speedy response from the private sector ever since the emergence of wind power in the country. The first wind energy park in the state was commissioned in1956 at Mullaikadu near Tuticorin and 10 units of 55Mw each were installed since then a major transformation in the exploitation of wind energy has taken place particularly in the private sectors. Wind farms have sprung up all along the 19-mile road from Muppandal to Kanyakumari, a town wedged between the Bay of Bengal, the Arabian Sea and the Indian Ocean Wind is the primary reason for Tamil Nadu's leadership in renewable energy. The potential area that is suitable for the establishment of wind generators in Tamil Nadu are mostly confined to the southern (Aralvoimozhi pass and Shengottai pass) and south western (Palghat and Cumbum pass) parts of the state.

Wind constitutes over 88 per cent of total renewable energy installed capacity in the state. The total wind based power production capacity in the country is 16179 MW on January 2012. Of this 6696 MW is installed in Tamil Nadu making it the clear leader in the wind energy sector in India accounting for about 41 per cent of the total installed capacity in the country (Government of Tamil Nadu, 2012).

Wind Energy Capacity Trends in Tamil Nadu

Year	*Total Installed Capacity (MW)*	*Annual Generation(MW)*
2000-01	812.6	1094.175
2001-02	857.5	1257.11
2002-03	990.3	1305.703
2003-04	1361.5	1714.47
2004-05	2036.9	2260.73
2005-06	2894.5	3444.28
2006-07	3472.4	5268.92
2007-08	3853.1	6066.65
2008-09	4284.2	6656.15
2009-10	4886.4	8145.51
2010-11	5883.8	8720.05
2011-12	6967.3	9763.05
2012-13 (up to Sep'12)	7141.9	3197.15

Statement of the Problem

Availability of adequate energy is one of the pre-requisites for the economic development of any country. Electricity, which is one of the sources of energy, is generated through various methods and sources, of which thermal, based on water and coal is vastly popular. However, such sources of electricity pose severe restriction, as they directly depend on the availability of raw materials on the one hand, and also involve enormous pollution on the other. Thus, from the point of view of sustainability and environmental safety, the dependence on conventional, which are non-renewable in nature, needs to be reduced. Moreover, in India as a whole and also in most of the individual states, electricity is in short supply, which is also the reason for pushing for the increased generation of renewable energy sources like wind.

Wind energy, a clean energy, emits no greenhouse gases and can be generated without exploiting any natural resource. In a developing country, it is capable of creating not only new investment potential, but also employment opportunities both directly and indirectly. When the windmills are located in a economically backward area, it can act as the main source of development of that particular region. Though the benefits of wind energy has been established in many countries, both developed and developing countries are rapidly increasing their investment and total installed capacity in the wind mill sector, such a move is not seen in India, However, it has been noted that Tamil Nadu, which is one of the ten States that have involved in the generation of wind energy, is the pioneer in this filed, since it generates more than 40 per cent of the total wind energy generated in India. Hence, it is important to examine the role played by the wind mill sector in improving the regional economy through its ability in creating both direct and indirect employment and thereby

improving the livelihood of the local population. Wind power development has benefited landowners, who had no means to cultivate their otherwise barren land leads to rural development. This study makes such an attempt with the help of primary data.

Area of the Study

This study examines the economic impact of the wind mill sector in Kanyakumari district, Tamil Nadu. Tamil Nadu is the most prominent State in India, as far as the generation of wind electricity is concerned, since it has been contributing more than 40 per cent of the total wind power generated in the country. In Tamil Nadu, Kanyakumari district has been in the forefront due to its strategic location, which gains immense geographical advantage, since it experiences strong wind for most part of the year. This district boasts of a number of wind mills installed in the State, in which Thuvalai taluk has been selected as the major area of study, since it is blessed with quite a number of wind mills and thus has been contributing to the surrounding economy. From this taluk, 10 villages have been identified, all of which are located in the Panchyat union of Aralvoimozhi and hence, it forms the area of the present study.

Period of the Study

The growth and distribution of wind electricity in India and Tamil Nadu has been examined in this study with the help of secondary data. For this purpose, data pertaining to the growth in the total installed capacity and the extent of generation of electricity through wind mills in India and other States, including Tamil Nadu has been gathered for the period from 1995-96 to 2011-12. This duration forms the period of the present study. The primary data regarding the economic impact in terms of employment, income and expenditure and other livelihood opportunities in the study area have been collected through field survey during July to October 2012.

Objectives of the Study

The following are the objectives of the study:

1. To examine the growth in the installed capacity of wind electricity in India and Tamil Nadu;
2. To review the Government policies pertaining to the renewable energy in general and to the wind energy in particular in India;
3. To study the role of wind mill sector in employment generation in the study area;
4. To analyse the impact of the wind mill sector in terms of income and expenditure among the sample respondents in the study area;
5. To ascertain the opinions of the sample respondents pertaining to the need and usefulness of wind mill sector; and
6. To suggest policy measures for the development of the wind mill sector in India.

Hypotheses of the Study

The following hypotheses are framed in this study:

1. There is significant relationship between wind mill sector and employment opportunities in the study area;

2. There is significant difference in the income levels of the sample respondents in the study area;

3. There is significant variation in the expenditure levels among the sample respondents in the study area; and

4. Wind mill plays a significant role in the socio-economic conditions of the sample respondents in the study area.

Methodology of the Study

This study analyses the impact of the wind mill sector on the economic conditions of the people residing in Aralvoimozhi Panchayat union which is located in Thuvalai taluk of the Kanyakumari district, Tamil Nadu. From this Panchayat union, a total of 10 villages have been identified and they are classified into two, viz., Mupandal wind farm area and non-wind farm area. From these two areas, the sample respondents have been drawn in order to examine the economic impact of the wind mill sector, and the required data pertaining to their socio-economic conditions have been gathered. For this purpose, a standard questionnaire has been prepared which contained information pertaining to their identity, personal details, household particulars, asset possession, employment details, income and expenditure pattern, migration particulars and opinions regarding the need and usefulness of the wind mill sector. A pilot survey has been conducted in order to ascertain the appropriateness of the questionnaire in the two panchayats. On the basis of this survey, necessary modifications have been carried out and the final field survey has been conducted in the study area. The gathered data has been analysed on the basis of the sex, age, educational levels, community and employment of the sample respondents who are residing in the two villages, in order to establish the impact of the wind mill sector on the economic conditions of the sample respondents.

Sampling Design

This study is based on multi-stage random sampling method. In the first stage, Kanyakumari district has been taken as the sample district, since the popular wind farm area of the State, viz., Muppandal wind farm area is located in this district. In the second stage, the Thuvalai taluk has been selected, as Muppandal is situated in this taluk. In the third stage, the Panchyat union of Aralvoimozhi which is located in Thuvalai taluk has been selected as the sample area, since it comprises of the wind farm area and the non-wind farm area. In the fourth stage, the sample villages have been identified: Muppandal forms the centre of the wind farm area around which five villages are located: Moovendar Nagar, Ovaiyar Nagar, Annal Nagar, Bharathi Nagar and Maruthuvar Nagar and these five villages are named as the wind farm area. The five villages which are classified as non-wind farm area, which are also located in Aralvoimozhi are: Thuvalai, Visuvasapuram, Vellamadam, Madhavalayam and Cholapuram. The number of households in the selected sample villages and the number of sample households considered for this study is presented in the following table.

Area	Total Number of Households	Number of Sample Households
Wind Farm Area	1061	212
Non-wind Farm Area	1179	236
Total	2240	448

Source: Primary Census Abstract, Census of India, 2011, New Delhi.

Thus, a total of 448 households have been taken as the sample for this study, which comprises of 212 households from the wind farm area and 236 households from the non-wind farm area. Moreover, there is also considerable amount of floating population in the wind farm area, who travel on daily basis from the neighbouring taluks, who have also been included as the sample households in the wind farm area segment

Statistical Tools Used

The collected data are examined with the application of ratio analysis, diagrammatic representation, descriptive statistics, t-test, ANOVA, Chi-square test, regression model and other appropriate tools.

Extent of Variations in the Economic Conditions of the Sample Respondents - Area Wise Descriptive Statistics

Area	*Variable*	*Mean*	*SD*	*Mini.*	*Max.*
Wind Farm Area	Days Employed	335.2	20.4	290	365
	Monthly Income	12676.9	3457.5	5500	55000
	Household Income	15792.5	9064.9	7000	70000
	Days Employed in Agriculture	Nil	Nil	Nil	Nil
	Days Employed in Non-Agriculture	335.2	20.4	290	365
	Agricultural Income	Nil	Nil	Nil	Nil
	Non-Agri. Income	12676.9	3457.5	5500	55000
	Value of Consumer Durables	183726.4	214480.9	125000	1050000
	Value of Assets	214915.3	333526.6	150000	1500000
	Food Expenditure	3149.7	1651.9	2000	7500
	Non-Food Expenditure	3464.2	3578.4	2500	25000
	Monthly Savings	2251.2	1946.1	Nil	9000
Non-Wind Farm Area	Days Employed	298.4	30.8	200	365
	Monthly Income	10914.4	5878.2	3000	25000
	Household Income	11546.7	5025	6500	50000
	Days Employed in Agriculture	233.9	25.0	150	275

Area	*Variable*	*Mean*	*SD*	*Mini.*	*Max.*
	Days Employed in Non-Agriculture	307.4	31.9	240	365
	Agricultural Income	6222.2	10352.4	3000	5500
	Non-Agri. Income	11571.8	5879.0	4000	25000
	Value of Consumer Durables	151211.9	105478	75000	825000
	Value of Assets	190646.3	303149	100000	1200000
	Food Expenditure	2847.5	1550.5	1500	5000
	Non-Food Expenditure	3147.5	4416.1	2000	19000
	Monthly Savings	1654.6	800.2	Nil	5000

Opinions of the Respondents on the Role of Wind Farm Area

Statement	*Opinions*					*Total*
	SA	A	NO	D	SD	
Wind mills play a very important role in our daily life	198 (40.6)	192 (39.3)	21 (4.3)	45 (9.2)	32 (6.6)	488 (100.0)
Wind mills are essential for the energy security of the economy	145 (29.7)	128 (26.2)	58 (11.9)	92 (18.9)	65 (13.3)	488 (100.0)
Wind mills provide direct employment to many people	189 (38.7)	212 (43.4)	15 (3.1)	32 (6.6)	40 (8.2)	488 (100.0)
Wind mills also generate indirect employment in the region	195 (43.5)	221 (49.3)	10 (2.2)	11 (2.5)	11 (2.5)	448 (100.0)
Wind mills directly reduce the use of electricity from other sources (Thermal)	141 (31.5)	153 (34.2)	52 (11.6)	62 (13.8)	40 (8.9)	448 (100.0)
Wind mills directly reduce the emission of Greenhouse Gases	121 (27.0)	134 (29.9)	59 (13.2)	78 (17.4)	56 (12.5)	448 (100.0)
Wind mills provide an important source of income to the people in this region	182 (40.6)	209 (46.7)	32 (7.1)	16 (3.6)	9 (2.0)	488 (100.0)
Wind mills lead to pollution in this area	75 (16.7)	91 (20.3)	38 (8.5)	124 (27.7)	120 (26.8)	488 (100.0)
Wind mills have resulted in land price rise in this area	187 (41.7)	219 (48.9)	16 (3.6)	17 (3.8)	9 (2.0)	488 (100.0)
Wind mills are an important source of livelihood	211 (47.1)	199 (44.4)	15 (3.3)	14 (3.1)	9 (2.0)	448 (100.0)
The number of wind mills should be increased to improve the lives of the people	187 (41.7)	196 (43.8)	17 (3.8)	28 (6.3)	20 (4.5)	448 (100.0)

Regression Estimates: Role of Wind Farm Area

Variables	*Beta*	*t-value*	*Sig.*
Constant	12.217	9.844***	0.000
Area	-0.585	-7.990***	0.000
Gender	-0.214	-2.322**	0.027
Age	-0.361	-2.466**	0.024
Educational Level	0.488	6.154***	0.000
Nature of Employment	0.527	6.598***	0.000
Days Employed	0.709	7.244***	0.000
F-value	124.856***		
Adj. R2	0.683		

The values of the beta co-efficients indicate that when age of the respondent decreases by one unit, his income goes up by 0.361 units; when level of education goes up by one unit, the income of the respondent also goes up by 0.488 units, while in the case of number of days employed, an one unit increase leads to 0.709 unit rise in the income level of the respondents. All independent variables jointly explain more than 68 per cent of the changes in the estimated dependent variable. This indicates the fact that number of days employed, nature of employment, level of education and age are all closely related with the wind farm area and hence, they significantly influence the monthly income of the respondents.

Testing of Hypotheses Testing the Relationship Between Type of Employment and Area

Particular	*Value*	*df*	*Asymp. Sig. (2-sided)*
Pearson Chi-Square	217.161***	6	0.000
Likelihood Ratio	276.682	6	0.000
Linear-by-Linear Association	25.610	1	0.000
N of Valid Cases	448		

It is noted that the calculated Pearson Chi-square value of 217.161 is statistically significant at 1 per cent level and hence, the null hypothesis is rejected. This suggests that there is significant relationship between area of the respondents and their type of employment, since the proportion of the respondents who are employed as skilled workers and semi-skilled workers are higher in the wind farm area than in the case of the non-wind farm area.

Testing the Difference in the Monthly Income Levels of the Sample Respondents

Variable	*t-value*	*df*	*Sig. (2-tailed)*	*Mean Difference*	*95% Confidence Interval of the Difference*	
					Lower	*Upper*
Monthly Income	41.380***	447	0.000	10036.83	9560.14	10513.52

The result suggests that the calculated t-value of 41.380 is statistically significant at 1 per cent level, which calls for the rejection of the null hypothesis that states the absence of significant difference in the monthly income levels of the sample respondents. Hence, there is significant difference in the income levels of the sample respondents who belong to the wind farm area and non-wind farm area, since it is higher in the former than in the non-wind farm area.

Testing the Variation in the Expenditure Levels Among the Sample Respondentstesting the Variation in the Expenditure Levels Among the Sample Respondents

Variation	*Sum of Squares*	*df*	*Mean Square*	*F-value*	*Sig.*
Between Groups	79699650.97	1	79699650.973	31.162***	0.000
Within Groups	1140698005.27	446	2557618.846		
Total	1220397656.24	447			

Note: *** indicates 1 per cent level of significance.
Source: Computed from field survey data.

It is observed from the table that the calculated F-value of 31.162 is statistically significant at 1 per cent level and thus, the null hypothesis is rejected. This indicates to the fact that there is significant variation in the expenditure levels among the respondents who are located in the wind farm area and non-wind farm area. The higher income levels of the respondents who are located in the wind farm also enable them to spend more for their food requirements than that of the respondents who belong to the non-wind farm

Testing the Role of Wind Mill Sector in the Socio-Economic Conditions of the Sample Respondents

	Ranks			
	Area	N	Mean Rank	Sum of Ranks
The socio-economic condition of the region has improved due to wind mills	Wind Farm Area	212	283.67	60138.04
	Non-Wind Farm Area	236	158.63	37436.68
	Total	448		

Test Statistics	
	The socio-economic condition of the whole area has improved considerably due to wind mills
Mann-Whitney U	11052.000
Wilcoxon W	33630.000
Z-statistic	10.866***
Asymp.Sig.(2-tailed)	0.000

Note: *** indicates 1 per cent level of significance.
Source: Computed from field survey data

It is inferred from the table that the mean rank associated with the wind farm area is higher (283.67) than the mean rank associated with the non-wind farm area (158.63) and thus, the calculated Z-value of 10.866 is statistically significant at 1 per cent level. This calls for the rejection of the null hypothesis, which indicates the fact that the wind mill sector does play a crucial role in the socio-economic conditions of the sample respondents who are located in the wind farm area. This is done by providing employment on a more regular nature, better wage rate and also by attracting better skilled workers, which will be difficult otherwise.

Major Findings

- It is noted that in the total sample size of 448 respondents, 212 (47.3 per cent) reside in the wind farm area and 236 (52.7 per cent) reside in the non-wind farm area, both located in the Thuvalai Taluk of the Kanyakumari district.
- Among the sample respondents, 60.5 per cent belong to the age group of up to 40, which is 67 per cent among those who belong to the wind farm area and 54.7 per cent in the case of those who reside in the non-wind farm area,
- The level of education is high in general, since only 9.2 per cent is illiterate, which shows the level of educational attainment in the district.
- Nuclear families are quite higher in the study area with 67.4 per cent preferring this type of family, which is 68.9 per cent in the wind farm area and 66.1 per cent in the case of the non-wind farm area.
- Among the total sample households, 7.4 per cent have up to 4 members in their families, which is 79.7 per cent in the wind farm area and 75.4 per cent in the case of the non-wind farm area. This suggests that the family size is smaller in the wind farm area than in the case of the non-wind farm area.
- Proportion of the unskilled workers is higher in the non-wind farm area (30.5 per cent) than in wind farm area (20.8 per cent). Thus, the wind farm area provides greater proportion of skilled workers than in the case of the non-wind farm area and thus, the respondents residing in the latter are forced to depend on the agricultural sector.
- The percentage of temporary employees is considerably higher in the non-wind farm area (62.1 per cent) than in the case of wind farm area (37.9 per cent).

- The nature of ownership of the houses among the respondents suggests that out of the 448 respondents, 262 (58.5 per cent) live in their own houses, while the remaining 186 respondents (41.5 per cent) live in rented houses.
- Dependence on agriculture is quite less in the sample area and it occurs exclusively in the non-wind farm area, while all the wind farm area respondents are employed either in the industrial or service sector, whereas the share of those who are engaged in the service sector is 71.2 per cent in the wind farm area, but 66.1 per cent in the non-wind farm area.

Limitations of the Study

The main thrust of the study is to examine the impact of wind mill sector on the economic conditions of the people residing in that particular region. For this purpose, the wind mill sector located in Muppandal wind mill area is purposively chosen and in order to evaluate its economic impact on the regional economy, a non-wind farm area in the same vicinity has also been purposively selected. The required data have been gathered from the selected households who are residing in these two areas. Thus, the results obtained in this study depend exclusively on the information provided by the sample households.

Conclusion

The respondents in the wind the farm area are taken as the study group and those outside are taken as the control group and their socio-economic characteristics are compared.

This brings out the fact that quality of employment with more regular and permanent nature of jobs with the emphasis on skilled workforce is the key in the wind farm area.

The non-wind farm area does not provide such qualitative employment with such regularity, which is directly reflected in the low levels of income of these respondents. Lack of sufficient skill possession among them is also the reason for their economic vulnerability.

The Government needs to take more proactive measures like increasing the tariff rate for the wind power generated on par with other leading states, investing more in strengthening of electricity grid and also to attract new investment in the wind mill sector. This will certainly help the local population in terms of better employment and higher income and thus, better socio-economic conditions and the State with more new wind mills and increased wind power generation from the existing wind mills.

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"Quality Circle" for the Improvement Into the Productivity at Jyoti CNC Automation Pvt. Ltd.

Yashpalsinh Zala and Ashvinkumar H. Solanki

Keywords: *Quality, Productivity, Improvement, Development*

Abstract

This paper represent that quality circle is helpful technique to improve productivity of employees. A need of qualitative productivity in any organisation is most important in today's era. Country's living standards is almost depends upon, productivity i.e. the ability of the nations to produce effective and efficient goods and services. The Jyoti CNC is one of them to take lead to improve GDP of the nation and living standard of country. Here researcher includes quality circle the policy which is adopted by Jyoti CNC to improve productivity.

Yashpalsinh Zala, Assistant Professor, Sunshine Group of Institutions, Rajkot, Gujarat ,India

Dr Ashvinkumar H. Solanki, Associate Professor, Department of Commerce and Business Administration, Saurashtra University, Rajkot, Gujarat, India

Introduction

"QUALITY IS AN ASSET WHICH MAY BE OFFERED TO THE POTENTIAL CUSTOMER OF A PRODUCT OR A SERVICE."

It mainly depends upon two factors:

1. Product or service design.
2. Operating system - makes a product/provides a service.

Quality Policy

We are committed to……

1. Meet customers' expectations of quality and services in premium segment.
2. Maintain high morale of employees.
3. Use eco-friendly technology and maintain friendly environment between employees.

Environment Policy

We believe that preservation of environment is essential for the survival of our business, employees, society and surroundings. We shall achieve it with the involvement of our workforce, vendors, customers and neighborhood.

Major Functions Undertaken By Jyoti

1. Regular checking of set parameters.

2. Checking individuals.

3. Checking of abnormality in the accuracy and also highlight variation.

Quality Circle

Genesis:

Japan: Before II world-war, was known as country producing most cheap and inferior quality of goods. II world war 1939-45, Japanese industries had devastating effects. Japan made up to overcome the long standing Image of inferior quality of goods.

In 1962, the first "Quality Circle" was launched i n Japan under the guidance of Prof. Kavru Ishikawa. Now there are more than 10 million people actively working in more than one million Quality Circles. Japanese are appreciably patriotic.

Definition:

Quality Circle is a small group of 5 to 15 persons, working in the same area who voluntarily meet regularly for about an hour every week to identify, analyze and resolve their work related problems through problem solving techniques leading to their improvement in total performance, quality, productivity, safety, attitudinal improvement and enrichment of work life.

What is Quality Circle?

Conceptually, Dr. K. Ishikawa described a quality circle as:

- A small group
- To perform quality control activities
- Within the same workshop/work area
- The group continuously carries quality circle activities
- For self-development and mutual development

Misconception about Quality Circle

It is a universal concept which can be applied at hospitals, hotels, banks, schools, colleges, housing societies, social organizations and even at homes. It doesn't means for deriving benefits only by the mgmt. / Entrepreneurs but it is an effective medium for character building of every employee.

Launching and Institutionalizing Quality Circles:

- Quality Circle launching should be systematic and not on instant basis
- It brings about cultural changes, which needs initiation by the management
- Management needs to exhibit the option for participative culture
- Changes should be organic and not on cosmetic
- For launching, management should follow step by step approach.

Literature Review

1. **Rajkumar and Garg (2002),** has conducted a case study in Dye House of a Shipping mill of West Bengal and in that a quality circle, through the use of statistical tools had 25 solved the problems one by one and moved the industry towards increasing profits and improves productivity. The study found that among the various quality control techniques, quality circles was simple, with economic and best techniques for brining incremental improvement in the organization.

2. **Krishnamurthy (1992),** reviewed the functioning of quality circles in Bharath Electronics Limited Bangalore. The experience at the Bharath Electronics Limited in implementation of quality circles found that the implementation of quality circle has enabled the company to reduce the time required for development and implementation of a company specific model for total quality management. However this study is very much limited to only one organization.

3. **Joseph (1984),** conducted a study of quality circles at Bharath Heavy Electronics Limited, Hyderabad found 23 that members of those quality circles which met regularly perceived that their quality of work life to be better as compared to that of non quality circle members. But non quality circle members were found to be superior on quality of work life parameters as compared to the quality circle members whose circles were not functioning properly. However this study is limited to only one variable and one industry.

4. **Beyer and Grola (2003),** have made study on the development of quality circles/peer review groups as a method of quality improvement in Europe. Their study revealed that quality circles were very active in 10 countries; 16 countries showed little or no activity. Participation ranged from 2 to 86% of all quality circles. Development appeared to be associated with establishment in private practice and the portion of quality circles with vocational training. Eight programmes from six countries describing the establishment and the targeting of quality circles work are presented as case reports. However in the last 10 years, substantial development of quality circles has taken place in Netherlands, UK, Denmark, Belgium, Ireland, Sweden, Norway, Germany, Switzerland and Austria, further evaluation is needed to clarify the impact on quality of care.

Research Methodology

Research Topic

"QUALITY CIRCLE" FOR THE IMPROVEMENT INTO THE PRODUCTIVITY AT JYOTI CNC AUTOMATION PVT. LTD.

Research Objective

The main objective of the study is

- To increase the productivity of CNC machines at Jyoti.
- To maintain the quality of CNC machines at Jyoti.

Research Designs

Research	*Objective Research*
Data Source	Primary data, Secondary data
Population	100
Geography	Rajkot City
Research Method	Simple Random Sampling
Research Technique	Questionnaire
Type of Questionnaire	Structured
Type of Questions	Closed ended/ Open ended Questions
No of Questions	13
Sample Size	50
Place	Employees of Jyoti CNC

Research limitation

The limitations of the study are as follow:

Personal Bias: Individuals may have personal bias towards Company, their policy, working environment, relations with the owners, past experience, etc.

Sample Size: The last limitation is Sample Size, which is of 50 only; due to lack of time and busy schedule and shifting duty of employees.

Decision Maker: Conclusion is derived by oneself (Decision Maker)

Research Error: Some of the respondents were not giving the proper attention on the questioner and they were also lake of education so language become barrier for them but to minimize the error I explain question in local language.

Data Interpretation and Analysis

The interpretations are listed here along with tables and charts in the following sequence:

- Research on Quality Circle done within organization
- Overall analysis
- Analysis about effectiveness of quality

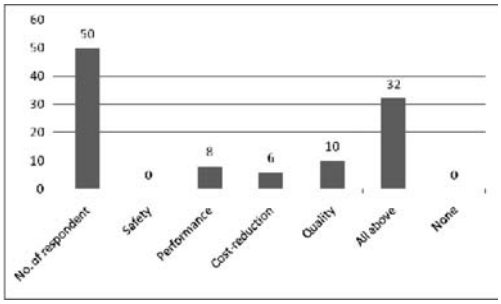
Note: The questionnaire consists of 13 questions which gives different view of employees.

I have converted research question from categorized to metric data to fulfil the condition to use Z-test.

In this survey I take sample of 50 employees of Jyoti CNC for analysis and interpretation of effectiveness of quality circle system in Jyoti CNC. To know different views of employees I used questionnaire and it covers various questions and analysis of these questions are as follows:

1) What do you think quality circle would be effective in:

No. of respondent	*50*
Safety	0
Performance	8
Cost-reduction	6
Quality	10
All above	32
None	0

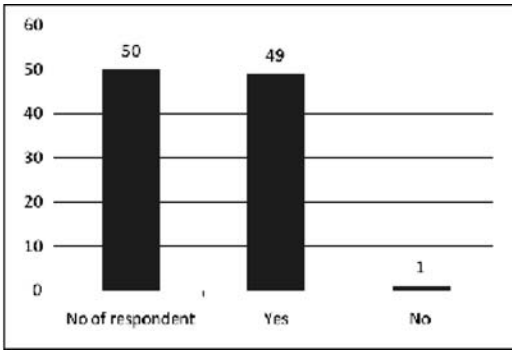


Findings:

In my survey I had t aken 50 employees as sample and found that out of those 50 employees of Jyoti CNC sa fety is preferred by 0 employees, perfor mance preferred by 8 employees, cost-reduction is preferred by 6 employees, quality is preferred by 10 employees and highest all above option is preferred by 32 employees. It suggests that quality circle maintain not any one of above option but all above option [safety, cost-reduction, performance, quality.

2) Do you think that quality circle should be effectively impleme nted in Jyoti CNC Automation PVT LT D.?

No of respondent	*50*
Yes	49
No	1

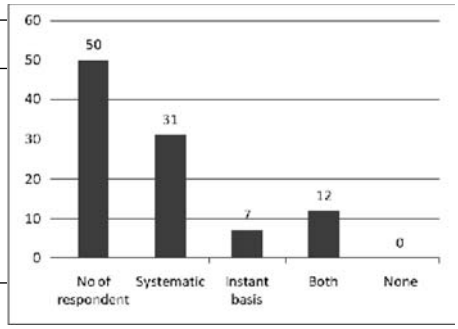


Findings:

Out of 50 employee s 49 said that "Yes" quality circle is effectively implemented in Jyoti CNC and only 1 employee said "No" to this question.

3) Quality circle launching should be one of the following:

No of respondent	*50*
Systematic	31
Instant basis	7
Both	12
None	0

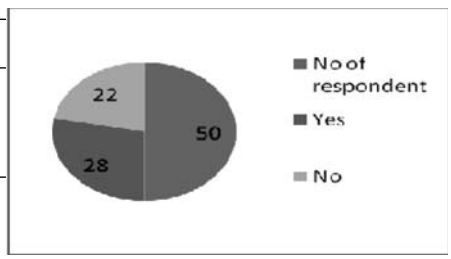


Findings:

Out of 50 employee s 31 employees agreed that quality circle launching should be systematic and not on instant basis but 7 employees said that it should be instant basis whereas 12 employees said that it should be both systematic as well as instant basis.

4) Does all the members of the company participated in quality circle?

No of respondent	*50*
Yes	28
No	22

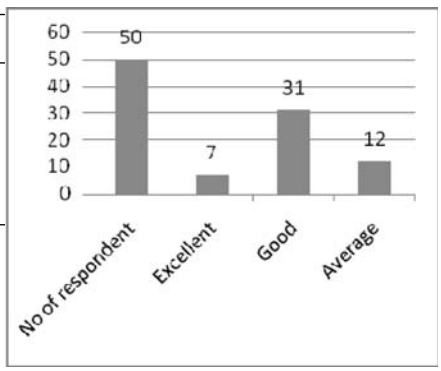


Findings:

Out of 50 employee s 28 said that all the members of their gro up have attended quality circle training while 22 said that one of their member d id not attended the quality circle training.

5) Rate as per your convenience: Total improvement t hrough quality circle in workers is?

No of respondent	*50*
Excellent	7
Good	31
Average	12

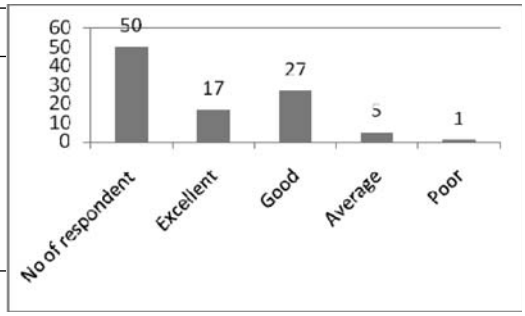


Findings:

Out of 50 employees 7 agreed that with the help of quality circle total improvement in worker is excellent whereas 31 said that improvement is good, 12 said that there is an average improvement and no one said that improvement is worse.

6) "Group suggestion" concept in quality circle is?

No of respondent	*50*
Excellent	17
Good	27
Average	5
Poor	1

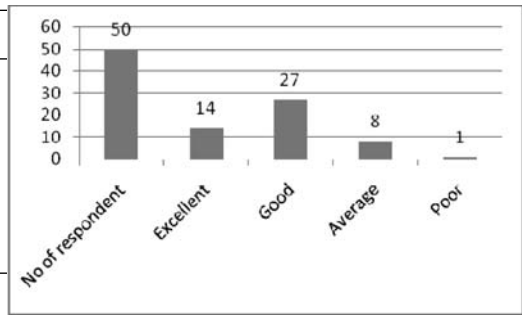


Findings:

Out of 50 employees 17 felt that group suggestion concept is excellent whereas 27 felt that this concept is good, 5 felt that this concept is average but 1 felt that this concept is not necessary in quality circle.

7) Co-ordination and fa cilitation concept in quality circle is?

No of respondent	*50*
Excellent	14
Good	27
Average	8
Poor	1

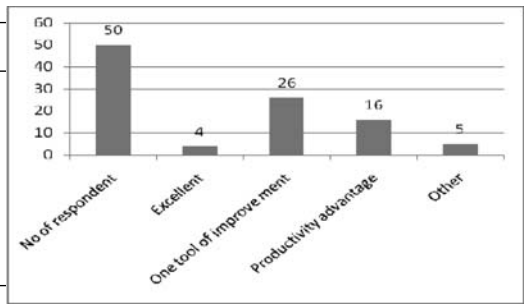


Findings:

Out of 50 employees 14 felt that co-ordination and facilitation concept is excellent whereas 27 felt that this concept is good, 8 felt that this concept is average but 1 felt that this concept is not necessary in quality circle.

8) One word to define quality circle:

No of respondent	*50*
Excellent	4
One tool of improve ment	26
Productivity advantage	16
Other	5



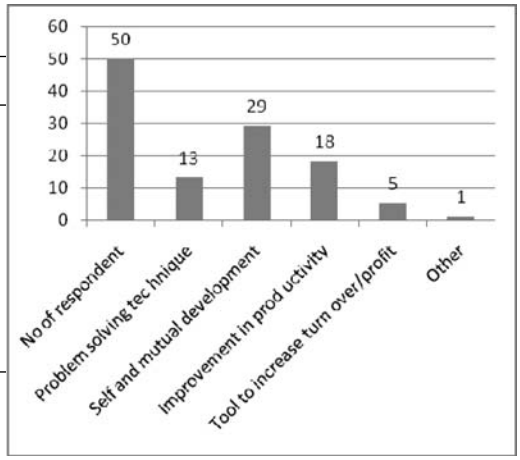
Findings:

Out of 50 employee s 4 described quality circle in one worth at it is Excellent, 26 defined that it is one tool of improvement, 16 defined that it has an advantage into the productivity but one describe

in his own thoughts that it is nothing but the qualitative product with reduced cost.

9) Things you want to learn from this technique:

No of respondent	*50*
Problem solving technique	13
Self and mutual development	29
Improvement in productivity	18
Tool to increase turn over/profit	5
Other	1

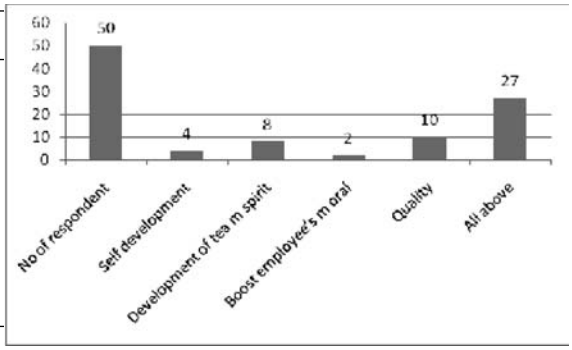


Findings:

Out of 50 employees 13 said that they want to learn problem solving technique, 29 said that they want to learn self-development and mutual development, 18 said that they want to learn Improvement in productivity, 5 said that they want to increase the turnover/profit and 1 agreed on all above criterion.

10) What do you think about the benefits if quality circle?

No of respondent	*50*
Self development	4
Development of team spirit	8
Boost employee's moral	2
Quality	10
All above	27

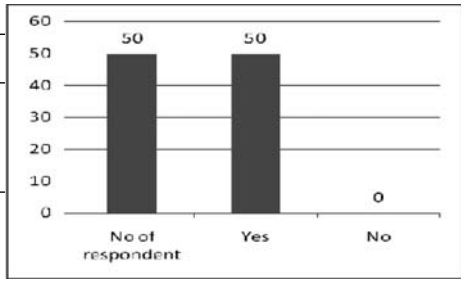


Findings:

Out of 50 employee s 4 think that it is necessary for the self-development, 8 think that it is necessary f or development of team spirit, 2 think that it is helpful to boost employee's moral, 10 think that it is helpful for increasing quality and 27 agreed on all above given criterion.

11) Do you believe that such kinds of technique help organizatio n for the development as a whole?

No of respondent	*50*
Yes	50
No	0

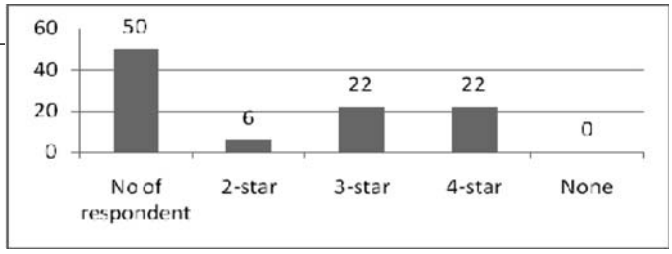


Findings:

Out of 50 employee s all believe that such kind of technique helps organization for the development as a whole means into safety, improved quality, and increase productivity.

12) Rate quality circle as per your view:

No of respondent	*50*
2-star	6
3-star	22
4-star	22
None	0

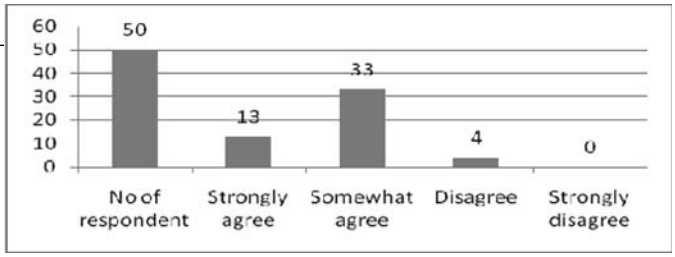


Findings:

Out of 50 employee s 6 gave 2-star rating means average performance of quality circle in Jyoti, 22 gave 3-star means good performance of quality circle in Jyoti, 22 gave 4-star mean s excellent performance of quality circle in Jyoti and none believe that it should not be the part of organization.

13) Do you really believ e that all the problems are resolved with the help of quality circle?

No of respondent	*50*
Strongly agree	13
Somewhat agree	33
Disagree	4
Strongly disagree	0



Findings:

Out of 50 employee s 13 strongly agree that all the problems are resolved with the help of quality circle, 33 partially believe that all the problems are resolved with the help of quality circle, 4 disagree that all the problems are resolved with the help of quality circle and none believe strongly that quality circle is not solving all the production level problems.

Testing of Hypothesis

Meaning of Hypothesis

A hypothesis is a statement about population parameter. Hypothesis testing significance. Testing is procedure that helps us to decide whether the hypnotized population parameter value is accepted or rejected by making use of the information obtained from the sample.

Null hypothesis:

A statistical hypothesis which is stated for the purpose of possible acceptance is called null hypothesis. It is usually denoted by H0, the null hypothesis may be expressed symbolically.

"Null hypothesis is the hypothesis which is tested for possible rejection under the assumption that it is true."

Alternative Hypothesis:

Any hypothesis which is complementary to null hypothesis. There are many chances that the calculated value is less or equal or more then null hypothesis.

Z-Test

"All the problems are resolved with the help of quality circle."

Out of 50 employees 13 strongly agree that all the problems are resolved with the help of quality circle, 33 partially believe that all the problems are resolved with the help of quality circle, 4 disagree that all the problems are resolved with the help of quality circle and none believe strongly that quality circle is not solving all the production level problems.

Step-1: Hypothesized

Null hypothesis (H0):	$\mu 1 - \mu 2 > 0$	All problems are resolved with quality circle
Alternative hypothesis (Ha):	$\mu 1 - \mu 2 < 0$	All problems are not resolved with quality circle

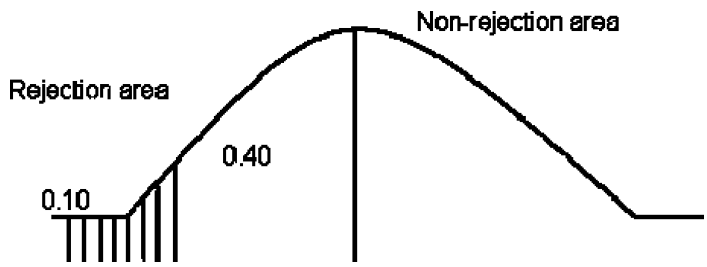
Step-2: Test

As the size of sample is more than 30 we are using z-test to test the hypothesis.

Step-3: Appropriative type-1 error rate:

α=0.10

Step-4:



Step-5: Gathering the data

$\overline{x_1}$= 295, $\overline{x_2}$=40

n_1=46, n_2=4,

x_1^2=2125, x_2^2=400

$$\overline{x_1} = \frac{130+165}{33+13} = \frac{295}{46} = 6.41$$

$$\overline{x_2} = \frac{40+0}{4+0} = \frac{40}{4} = 10$$

$$s_1 = \sqrt{\frac{\sum x_1^2 - \frac{(\sum x_1)^2}{n}}{n-1}} = \sqrt{\frac{2125 - \frac{(295)^2}{46}}{46-1}} = \sqrt{\frac{233.15}{45}} = \sqrt{5.18} = 2.28$$

$$s_2 = \sqrt{\frac{\sum x_2^2 - \frac{(\sum x_2)^2}{n}}{n-1}} = \sqrt{\frac{400 - \frac{(40)^2}{4}}{4-1}} = 0$$

Step-6: Calculation of Z

$$Z = \frac{(\overline{x_1} - \overline{x_2}) - (\mu 1 - \mu 2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$Z = \frac{(6.41-10)-(0)}{\sqrt{\frac{228^2}{46} + \frac{0}{4}}}$$

$$= = \frac{-3.59}{\sqrt{0.1120}}$$

= -10.73

Step-7: Action

As the tested value of Z = -10.73 which is less than table value of Z=1.28 hence hypothesis is rejected.

Step-8: Business implication

Since researcher does not have enough evidence which states that all problems are not resolved with the help of quality circle.

Findings

It seems that some of the problems are resolved with the help of Quality Circle and not all the problems. In the survey of Quality Circle, Jyoti has applied this technique well in advance than that of its competitors. It seems that the employees of Jyoti Company give somewhat agree to this system. As per the survey, we can compare that improvement into the productivity without and

with quality circle technique is completely different than each other. It is fact that qualitative goods always demanded in the market, Jyoti prefers this Quality Circle system. So, our products are always demanded into the market. Before the implementation of this technique, the quality was lessening than current situation and hence the customer satisfaction ratio is growing higher than past.

Suggestions

- Consistency of quality must be maintained to survive in the cut-throat competition (by China, Taiwan and USA) prevalent in the machine tools market.
- Company should ensure satisfactory after sales service. If necessary, the company should increase the service staff also.
- Company should have to carry out more improvement into the quality circle system. So, that quality also improves.
- Company should have to test this technique frequently rather than implementing just for the sake of improvement.
- Quality must be maintained for a longer period of time rather than depending on the size or lot of machines. Company should have to acquire latest technology in order to increase the level of qualitative machines.

Conclusion

Jyoti CNC automation PVT. LTD. Rajkot is an India's one of the best CNC manufacturer company. These data shows; Jyoti CNC is fastest growing machine tools manufacturing company. Quality Circle survey shows that quality of Jyoti CNC is very good. Jyoti CNC provides sales services & it is India's only one company which provides fast sales services. Jyoti CNC has adopted 'change' as a continuous process and its technocrats are flexible enough to adopt any changes in the manufacturing process in the product with a view to give the real value for money to their customer. Major competitors of Jyoti CNC are HAAS, ACE Designer. Consumers were satisfied with the after sales service provided by Jyoti CNC.

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Applicability of Mental Accounting in Financial Decision Making: An Empirical Study

Ankita Jain

Keywords: *Fungible, Mental Accounting, Rational.*

Abstract

Mental Accounting is the way people tend to separate money into separate "heads or buckets" for food, shelter, transport and other expenses. The concept of mental accounting was highlighted by Behavioural Economics pioneer Richard Thaler who was awarded 2017 Nobel Prize for Economics. He explained that money is fungible. The objective of the paper is to study the contribution of Richard Thaler relating to finance. Secondly, to find out the applicability and impact of mental accounting in the financial decision the investors make in their day to day life. In this paper, the data collected are both primary and secondary. To fulfil the first objective secondary data has been collected and for the second objective, primary data collection has been done. The methodology adapted is interview method. 30 investors were interviewed. On interviewing it was found out that- Credit cards makes people to spend more than usual. Again, we always corner the thing that gives us a loss or negativity. The study reveals that its difficult for human beings to act rational in most cases relating to make finance decision. Mental Accounting compels us to take decisions out of emotions.

Ankita Jain, Assistant Professor, DHSK Commerce College, Dibrugarh, Assam, India

Introduction

Investors spend a lot of money to gain wisdom about how to invest and where to invest, yet when they face the real world of investing, they fail. This is due to their inability to control their emotions and fear of being left out of the crowd. 1lakh rupees won in a lottery is same as 1 lakh rupees that is received as a salary, yet "the way treat money can differ depending upon the way we receive it". This is due to different mental accounting created by individual investors. Mental Accounting is the way people tend to separate money into separate "heads or buckets" for food, shelter, transport and other expenses.

Mental accounting is a concept associated with the work of Richard Thaler. According to Thaler, people think of value in relative rather than absolute terms. They derive pleasure not just from an object's value, but also the quality of the deal - its transaction utility. Mental Accounting is the shortcut the brain takes to assign different values to the same amount of money, depending on how and when the money has been acquired.

People willing to spend more when they pay with a credit card than cash. According to the theory of mental accounting, people treat money differently, depending on factors such as the money's origin and intended use, rather than thinking of it in terms of the "bottom line" as in formal accounting. An important term underlying the theory is fungibility, the fact that all money is interchangable and has no labels. In mental accounting, people treat assets as less fungible than they really are. Financing decisions and investments are greatly influenced by

mental account. The financing decisions that people take are mostly due to error in their application of mental accounting.

Objectives of the Study:

1. To study the contribution of Richard Thaler relating to finance.
2. To find out the applicability and impact of mental accounting in the financial decision making.

Research Methodology

The data collected are both primary and secondary. To fulfil the first objective secondary data has been collected and for the second objective, primary data collection has been done.The methodology adapted is interview method. 30 investors were interviewed.

Richard Thaler

Behavioural economics pioneer Richard Thaler has been awarded the 2017 Nobel Prize for Economics. He showed how humans rarely behave as rationally as economists think they would. He first developed the idea of mental accounting in order to better understand the cognitive operations used by individuals to organize and evaluate their economic activities. The basic idea here is that individuals can overcome the cognitive limitations encountered when making difficult economic decisions .

In Richard Thaler's words, the theory tries to address the question "How do people think about money?" A key motivation for the theory of mental accounting can be traced to the observation that individuals tend to group their expenditures into different categories (e.g.: housing, food, clothing, entertainment etc), with each category corresponding to a separate "mental account" and set aside for various types of household spending. By assigning to each "mental" account its own budget and its own separate reference point, this practice effectively limits the fungibility (of money) between the various accounts. This practice breaks with the fundamental economic notion of the universal fungibility of money. According to mental accounting, the value a person attributes to a given amount of money may in fact dependent crucially on the account it was originally assigned to, as well as depend on its context and framing.

Thaler's research of mental account describes how individuals can make better money decisions. So, following are his of insights relating to finance:

- Thaler's mental-accounting model describes how boundedly rational individuals adopt internal control systems to evaluate and regulate their budgets and also allows us to predict how this will systematically affect spending, saving, and other household behaviours. The term bounded rationality refers to an individual's limited inability in solving all complex economic decision problems in the most economically optimal way.
- Treatment of money is depended on the way we receive it or if it was originally embarked for something else. For example: people may save money in a jar for something special, like a holiday trip-while simultaneously carrying expensive credit card debt. Using these savings to pay off the debt would be cheaper, yet people are reluctant to touch the money in the jar.
- Mental Accounting is a concept of "house money". Here House Money means money people don't feel completely entitled to and may treat differently. It's as if the money belongs to the

"house", not us. It may be feel unearned money, that's not really our own. Because of that, it can be easier to spend. Example: winning from a lottery and gambling in a casino.

- We tend to overvalue what we own simply because of the endownment effect. Perfect example to describe endowment effect would be-a home owner who is very emotionally attached to their property. They are convinced that the house is worth more than the market rate.

Mental Account Application in Our Day to Day Financial Decision and Its Impact

To fulfil the second objective, 30 persons were interviewed and were asked few questions relating to a given situations as to how they would react or do, if they were on that hypothetical situations.

Question 1:

Imagine you are at the mall and you like a stylish suit.

a) You have just been gifted Rs.15,000 from a relative. Will you use that money to buy the suit?

Outcome: Out of 30 persons 23 said that will buy the suit, because they did not considered it as their own money.

b) You discover that you 15,000 in your saving account which you had forgotten. Will you use the money to buy the suit?

Outcome: Out of 30 persons 18 answered as they will not buy the suit, as it is their hard earned money.

Impact: Mental Accounting compels us to take decisions out of emotions. The 23 and18 respondents in both the case a) and b), that opted not to buy the suit as it was there hard earned money, had treated the same amount differently in both the situations. It shows that mental accounting makes a person to take irrational finance decision and dismisses the basic idea that money is fungible.

Question 2:

a) Have you set aside any savings for emergencies?

b) Do you avail of revolving credit on you credit cards?

Outcome: 12 responded as yes to both the options, i.e they have both set aside their savings for emergencies and also avail of revolving credit on credit cards. 10 responded as no to both options, i.e a) & b).

Impact: The 12 respondents who responded yes to both the options has an error in their mental accounting. This is so because, despite of having money in saving bank account, still the person will pay more interest in credit cards. Credit cards makes people to spend more than usual, as the money we spend is not physically given by us as in the situation of paying cash. Thus, investors earns less interest and pay more.

Question 3:

Suppose you have invested in shares of two companies X and Y. X face value was Rs.100 and shares of Y had a face value of Rs 100.Now you found out that Co X shares has come down to

Rs.75 and Co Y Shares shows a profit as its shares are now of Rs. 125.Which Shares will you sell and which would you retain?

Outcome: 21 persons responded that they will sell the shares of y which showed them a profit of Rs.25 and 9 persons responded that they would sell the shares of X which showed them a loss of Rs.25.

Impact: The 21 respondents who that will sell the shares that showed them profit are suffering from mental accounting. As a result they hold on to loosing investments. To explain the impact briefly, lets take an example-Suppose your friend has two sons - Amit and Sumit, Amit is very obedient and disciplined and Sumit is manner less and disobedient .One day to hear that your friend has thrown one of his sons outside the house. So, its obvious that he had disowned Sumit, because of his behaviour. From, this example, it is very clear that in real life scenario we always corner the thing that gives us a loss or negativity. But, in the given situation, i.e question 3 the investor is doing totally opposite of what we genuinely must have done. So, its an error of mental accounting.

Conclusion

The study reveals that its difficult for human beings to act rational in most cases relating to make finance decision. The fungibility of money is not something which is understood and applied by individuals, and thus suffers from mental accounting. Although many might think that mental accounting is good as it makes us spend in a rigid way , when we separate our expenses by dividing it into different heads. But this situation also shows us that we as human beings are lacking self-control. However, below are mentioned certain ways in which we can handle mental accounting

1. Try to pay cash more often instead of using cards. This is because due to mental accounting people spend more when they have debit or credit cards as compared with cash payment.
2. Be alert when spending big or small amount. We are generally more alert in spending large amount than spending small amount. But, if these small amount is being spent regularly then its more important to be alert in these cases as compared to big amounts.
3. Treat all income as earnings. All income from whatever source it may come must be treated in the same money. This is because while spending you spend the same amount.

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RESEARCH DEVELOPMENT RESEARCH FOUNDATION
4-Ma-22, Jawahar Nagar, JAIPUR – 302 004
Tel: (0141) 2650498, Mob: +91-9799201212
Email:- drjain.rda@gmail.com, drjain2001@rediffmail.com
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RESEARCH DEVELOPMENT RESEARCH FOUNDATION
4-Ma-22, Jawahar Nagar, Jaipur-302004 Rajasthan, India
Phone : +91-141-2650498 (Landline)+91-9799201212 (Mobile)
Email : drjain.rda@gmail.com, drjain2001@rediffmail.com
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